Probability and Statistics

1. **Course number and name:** 020PROES1 – Probability and Statistics

2. **Credits and contact hours:** 2 credits, 2x1:15 contact hours.

3. **Instructor's or course coordinator's name:** Rafic Faddoul

4. **Textbook and other supplemental material:**
   - **a.** Lecture notes
   - **b.** Assignement handouts.

   References

Sheldon M.Ross, (2003). *Introduction to probaility models* 8th edition: Academic Press an imprint of Elesevier
Philippe Tassi, (1992) *Méthodes statistiques*, 2nd edition : Economica
Robert W.Keener, (2010). *Theoretical Statistics. Topics for a Core Course*: Springer
Hogg, McKean, Graig (2005). *Introduction to Mathematical Statistics*, 6th edition: Pearson Prentice Hall
WalPole, Meyers, Meyers, (1998). *Probability and Statistics*, 6th edition : Prentice Hall
Donald G.Childers (1997). *Probability and Random Processes* : McGraw-Hill

5. **Specific course information**
   - **a. Catalog description:**
     Modeling – equiprobability – counting – conditional probability – statistical independence – discrete and continuous random variables – probability distributions – cumulative distributions – joint probability distributions – marginal distributions – Expected value – variance – common probability distributions – generating functions – variable transformations – convergence – central limit theorem – Gaussian vectors – simulation – descriptive statistics – sampling – estimation – statistical hypotheses testing.
   - **b. Prerequisites:**
   - **c. Required/Elective/Selected Elective:** Required for EE program

6. **Specific goals for the course**
   - **a. Specific outcomes of instruction:**
     Uncertainty modeling using probability distributions;
     Optimize decision making under uncertainty;
     Estimating the parameters of a population;
     Statistical hypotheses testing.

   - **b. KPIs addressed by the course:**

KPI	A1	B1	B3	K1
Covered	x	x	x	x
Assessed	x		x	x
Give Feedback				

7. Brief list of topics to be covered and approximate number of lectures:

Nbr Hours	Content
4	Discrete and continuous random variables – Probability distributions - Cumulative distributions
4	Joint probability distributions – mariginal distributions
4	Moments – Expected value - Variance
6	Common probability distributions
4	Moment Generating Functions - Transformations of Variables
2	Descriptive statistics
4	Sampling - Estimation
4	Hypothesis Testing
3	Linear Regression