

## IE 581 Tentative Calendar (2 pages), Revised Thursday January 14, 2021

**Notes:** L refers to [3]; N refers to [5]; G refers to [1]. References appear on the next page.

TUESDAY	THURSDAY
January 19 Syllabus & Intro, Simulation Worldview <i>Class 1</i>	January 21 Spreadsheet Simulation <i>Class 2</i>
January 26 Random Number Generators: L §7.1, §7.2, §7.4.2; N §6.5 Extra Reading: [4] HW1 Due: Q1–Q9 <i>Class 3</i>	January 28 [Drop date is Feb 1] Random Variate Generation: cdf inverse, L §8.2.1; composition, L §8.2.2; <i>Class 4</i>
February 2 R. Variate Generation: acceptance rejection, L §8.2.4, N §6.4.1 HW2 Due: Q10–Q13 <i>Class 5</i>	February 4 R. Variate Generation: L §8.3; Box-Muller, L §8.3.6; Beasley-Springer-Moro, G §2.3.2; Special Properties, L §8.2.6 <i>Class 6</i>
February 9 Multivariate Random Variate Generation: cascading formula, L §8.5.1; multivariate normal, L §8.5.2; HW3 Due: Q14–Q17 <i>Class 7</i>	February 11 [W date is Feb 12] Multivariate Random Variate Generation: NORTA, L §8.5.5, N 6.3.2 <i>Class 8</i>
February 16 [Purdue: Reading Day is Feb. 17] Process Generation: Poisson Process Review, L §8.6 HW4 Due: Q18–Q20 <i>Class 9</i>	February 18 Process Generation: Poisson Process, L §8.6 <i>Class 10</i>
February 23 Process Generation: Non-homogeneous Poisson Process, L §8.6 <i>Class 11</i>	February 25 Input Modeling: Intro, L §6.1; non-parametric, L §6.2.4 <i>Class 12</i>
March 2 Input Modeling: Distributions, L §6.2.4 HW5 Due: Q21–Q22 <i>Class 13</i>	March 4 Input Modeling: MOME/MLE, L §6.5 <i>Class 14</i>
March 9 Input Modeling: Goodness of Fit, L §6.6.2 HW6 Due: Q23–Q27 <i>Class 15</i>	March 11 Q&A / Review Day <i>Class 16</i>
March 16 <b>Midterm Exam</b> (on material through Input Modeling) <i>Class 17</i>	March 18 [Purdue: Reading Day; W/WF Date is Mar. 22] <i>Class 18</i>
March 23 Simulation: event list, event graph, L §1.4 <i>Class 18</i>	March 25 Output Analysis: m.s.e., categorizing output data, L Ch. 9 <i>Class 19</i>
March 30 Output Analysis: initial transient [6], methods for iid data HW7 Due: Q28 <i>Class 20</i>	April 1 Output Analysis: methods for estimating a steady-state mean <i>Class 21</i>

TUESDAY	THURSDAY
April 6 Output Analysis: batched means, [7], N §8.2.3 HW8 Due: Q29	Class 22 April 8 Output Analysis: variance reduction, L §11.1, §11.2, §11.3 Class 23
April 13 [Purdue: Reading Day]	April 15 No class
April 20 Ranking & Selection [2] HW9 Due: Q30–Q31	Class 24 April 22 Ranking & Selection Class 25
April 27 Special Topics (e.g., bootstrapping, quantile estimation) HW10 Due: Q32–Q33	Class 26 April 29 Special Topics / Flex Day Class 27
May 4 [Final Exam Week] IE 581 Final Exam Date/Time TBD by the Purdue Registrar	May 6

## References

- [1] P. Glasserman. *Monte Carlo Methods in Financial Engineering*. Springer-Verlag, New York, 2003.
- [2] S.-H. Kim and B. L. Nelson. Selecting the best system. In S. G. Henderson and B. L. Nelson, editors, *Simulation*, Handbooks in Operations Research and Management Science, Volume 13, pages 501–534. Elsevier, Amsterdam, The Netherlands, 2006.
- [3] A. M. Law. *Simulation Modeling and Analysis*. McGraw Hill Education, New York, 5 edition, 2015.
- [4] P. L’Ecuyer. History of uniform random number generation. In W. K. V. Chan, A. D’Ambrogio, G. Zacharewicz, N. Mustafee, G. Wainer, and E. Page, editors, *Proceedings of the 2017 Winter Simulation Conference*, pages 202–230, Piscataway, NJ, 2017. IEEE. URL <https://www.informs-sim.org/wsc17papers/includes/files/016.pdf>.
- [5] B. L. Nelson. *Foundations and Methods of Stochastic Simulation: A First Course*, volume 187 of *International Series in Operations Research & Management Science*. Springer, New York, 2013.
- [6] R. Pasupathy and B. W. Schmeiser. The initial transient in steady-state point estimation: Contexts, a bibliography, the MSE criterion, and the MSER statistic. In *Proceedings of the 2010 Winter Simulation Conference*, pages 184–197, 2010. URL <https://www.informs-sim.org/wsc10papers/017.pdf>.
- [7] B. Schmeiser. Batch size effects in the analysis of simulation output. *Operations Research*, 30(3):556–568, 1982.