BIM 283 Winter 2026	**Advanced Design of Experiments for Biomedical Engineers**	David M. Rocke January 5, 2026

Course Information

Class Meetings:	Monday and Wednesday 4:10pm–6:00pm 1060 Bainer
Office Hours:	By appointment, in person or on Zoom.
Office:	140B Med Sci 1C Cell: 530-304-1019 e-mail: dmrocke@ucdavis.edu web site: http://dmrocke.ucdavis.edu/ Email list: bim283-w26@ucdavis.edu Canvas site: BIM 283 001 WQ 2026
Required Text:	**Statistics for Experimenters, Second Edition.** Box, GEP, Hunter, JS, and Hunter, WG, Wiley, 2005.
Software:	Lectures and homework will utilize R for computation.
Course Grading:	Letter Grades based on – Homework – Attendance – Midterm Exam – Final Exam
Prerequisites	It is assumed that the student has taken at least one introductory statistics class. –

This course covers design and statistical analysis of experiments in biomedical engineering after a refresher in basic statistics. We will cover concepts and methods of experimental design such as randomization, blocking, covariate adjustment, and factorial designs. We will also cover methods specific to common biological assay types such as PCR, mass spectrometry (proteomics and metabolomics), immunoassays, and RNA-Seq. We will then pivot to methods for efficient experimental design. These methods are highly effective but the content is technical and requires careful attention.