

**Charles Nuttelman**  
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### **TEACHING HIGHLIGHTS AND INITIATIVES**

- Faculty Teaching Award (awarded by the undergraduate students) in 2019 and 2021; Faculty Mentor Award in 2011.
- Created six courses since fall of 2017 for Coursera.org that are wrapped up into 2 "specializations". Currently, there are over 347,000 learners in all 6 of these courses and enrollments continue to increase over time. There are over 156,000 learners enrolled in "Everyday Excel, Part 1", which is the most popular courses of these 6.
- Earned the "Top Instructor" distinction on Coursera and two of my courses were rated among the top 30 best courses of 2020 by inc.com (see [here](#); "Excel/VBA for Creative Problem Solving, Part 1" earned the #2 spot and "Everyday Excel, Part 1" earned the #5 spot). These courses have generated over \$500,000 for CU Boulder since 2018.
- Led ABET (engineering accreditation) efforts for 10 years (2007-2017) for the Department of Chemical and Biological Engineering. This included two audits and a successful overhaul of the assessment strategy; this strategy was adopted by numerous other departments in the College of Engineering.
- Improved department community by organizing and leading numerous student events such as hikes and industrial and pharmaceutical field trips.
- First faculty advisor of the Biomedical Engineering Minor (SPR '16 – SPR '18). As such, developed the curriculum and the introductory BMEN 2000 course.
- Have taught 18 different courses at CU Boulder in sizes ranging from 14 to 425. Have taught 22,000 student credit hours since spring of 2007.
- Developed and taught 2 online summer courses (CHEN 1310 and CHEN 3010).

### **PROFESSIONAL**

Summer 2018 – Current: Senior Instructor (new designation of Teaching Associate Professor as of January, 2022), Department of Chemical and Biological Engineering, University of Colorado at Boulder.

Fall 2007 – Summer 2018: Instructor, Department of Chemical and Biological Engineering, University of Colorado at Boulder.

Spring 2016 – Spring 2018: Faculty advisor for the College of Engineering and Applied Science's Biomedical Engineering Minor program.

Spring, 2007: Lecturer, Department of Chemical and Biological Engineering, University of Colorado at Boulder.

October 2005 – Spring 2007: Senior Research Associate, Department of Chemical and Biological Engineering, University of Colorado at Boulder.

### **HONORS AND AWARDS**

Coursera "Top Instructor", 2020-current

2021 Faculty Teaching Award, Department of Chemical and Biological Engineering, University of Colorado at Boulder (awarded by the undergraduates in the department)

2019 Faculty Teaching Award, Department of Chemical and Biological Engineering, University of Colorado at Boulder (awarded by the undergraduates in the department)

2018 Summer Session Online Course Development Grant to develop and teach COEN 1100 Computing Tools for Creative Problem Solving (Arts & Sciences course) in an online format.

2014 Summer Session Online Course Development Grant to develop and teach COEN 1300 Introduction to Engineering Computing in an online format.

2011 Faculty Mentor Award, Department of Chemical and Biological Engineering, University of Colorado at Boulder

### **LIST OF COURSES TAUGHT**

(Alphabetical; numbers in parentheses indicate number of times taught; includes spring 2022)

Summary: 18 different courses taught; 71 total courses taught (two sections in the same term counted twice); approximately 22,000 total student credit hrs as of spring of 2022.

BMEN 2000 Introduction to Biomedical Engineering (3); CHEN 1000 Creative Technology (3); CHEN 1211 Chemistry for Engineers (1); CHEN 1300 Introduction to Chemical Engineering (2); CHEN 1310/GEEN 1300/COEN 1300 Computing for Engineers (20); CHEN 2120 Material and Energy Balances (5); CHEN 2810 Biology for Engineers (6); CHEN 3010 Applied Data Analysis (9); CHEN 3130 Junior Lab (5); CHEN 3220 Separations and Mass Transfer (1); CHEN 4130 Senior Lab (2); CHEN 4520 Senior Design (3); CHEN 4530 Design Project (1); CHEN 4570 Process Control (4); CHEN 4805 Biomaterials (1); CHEN 4802 Tissue Engineering (1); CHEN 4810 Biological Engineering Lab (3); GEEN 1400 Engineering Projects (1).

"Excel/VBA for Creative Problem Solving, Part 1", online MOOC offered by Coursera (<https://www.coursera.org/learn/excel-vba-for-creative-problem-solving-part-1>)

"Excel/VBA for Creative Problem Solving, Part 2", online MOOC offered by Coursera (<https://www.coursera.org/learn/excel-vba-for-creative-problem-solving-part-2>)

"Excel/VBA for Creative Problem Solving, Part 3 (Projects)", online MOOC offered by Coursera (<https://www.coursera.org/learn/excel-vba-for-creative-problem-solving-part-3-projects>)

"Everyday Excel, Part 1", online MOOC offered by Coursera (<https://www.coursera.org/learn/everyday-excel-part-1>)

"Everyday Excel, Part 2", online MOOC offered by Coursera (<https://www.coursera.org/learn/everyday-excel-part-2>)

"Everyday Excel, Part 3", online MOOC offered by Coursera (<https://www.coursera.org/learn/everyday-excel-projects>)

### **EDUCATION-RELATED CONFERENCES ATTENDED**

Spring 2018 Coursera Partners Conference, Tempe, AZ, March 2018.

ABET 2014 Symposium, Pittsburgh, PA, April 2014.

2011 Annual Conference of the American Society of Engineering Education (ASEE), Vancouver, BC, June 2011. Presented "A Senior-Level Biological Engineering Lab Course at the University of Colorado: Experiences and Lessons Learned."

Accreditation Board for Engineering and Technology (ABET) 2010 Symposium, Las Vegas, NV, April 2010.

Workshop on Microbial Fermentation: Development & Scale-Up, Utah State University Center for Integrated BioSystems, May 2009.

## **EDUCATION**

University of Colorado, Boulder, CO. Doctor of Philosophy in Chemical and Biological Engineering. Defense completed in April, 2005. GPA: 3.68/4.00.

University of Colorado, Boulder, CO. Master of Science in Chemical Engineering. December 2001. GPA: 3.68/4.00.

University of Colorado, Boulder, CO. Bachelor of Science in Chemical Engineering with High Distinction. May 1999. GPA: 3.92/4.00.

## **PUBLICATIONS**

C.R. Nuttelman, M.A. Rice, A.E. Rydholm, D.N. Shah, and K.S. Anseth. "Macromolecular Monomers for the Synthesis of Hydrogel Niches and Their Application in Cell Encapsulation and Tissue Engineering." *Progress in Polymer Science*, submitted.

C.R. Nuttelman, A.M. Kloxin, and K.S. Anseth. "Temporal changes in PEG hydrogel structure influence human mesenchymal stem cell proliferation and matrix mineralization," *Tissue Engineering Advances in Experimental Medicine and Biology*, 585: 135-149 (2006).

C.R. Nuttelman, D.S.W. Benoit, M.C. Tripodi, and K.S. Anseth. "The effect of ethylene glycol methacrylate phosphate in PEG hydrogels on mineralization and viability of encapsulated hMSCs." *Biomaterials*, 27, 1377-1386 (2006).

C.R. Nuttelman, M.C. Tripodi, and K.S. Anseth. "Dexamethasone-functionalized gels induce osteogenic differentiation of encapsulated hMSCs." *Journal of Biomedical Materials Research*, 76A (1): 183-195 (2006).

C.R. Nuttelman, M.C. Tripodi, and K.S. Anseth. "Synthetic Hydrogel Niches That Promote hMSC Viability." *Matrix Biology*. 24(3): 208-218 May 2005.

C.R. Nuttelman, M.C. Tripodi, and K.S. Anseth. "In Vitro Osteogenic Differentiation of Human Mesenchymal Stem Cells Photoencapsulated in PEG Hydrogels." *Journal of Biomedical Materials Research*. 68A (4): 773-782 MAR 15 2004.

C.R. Nuttelman, S.M. Henry, and K.S. Anseth. "Synthesis and characterization of photocrosslinkable, degradable poly(vinyl alcohol)-based tissue engineering scaffolds." *Biomaterials*, 23, 3617-3626 (2002).

C.R. Nuttelman, D.J. Mortisen, S.M. Henry, and K.S. Anseth. "Attachment of fibronectin to poly(vinyl alcohol) hydrogels promotes NIH3T3 cell adhesion, proliferation, and migration." Journal of Biomedical Materials Research, 57, 217-223 (2001).

Bryant, Stephanie J., Nuttelman, Charles R., and Anseth, Kristi S., "An Evaluation of the Cytocompatibility of Several Photoinitiating Systems", Journal of Biomedical Materials Research – Polymer Edition 11: (5) 439-457 2000.

S.J. Bryant, C.R.Nuttelman, and K.S.Anseth, "The Effects of Crosslinking Density on Cartilage Formation in Photocrosslinkable Hydrogels," in Biomedical Sciences Instrumentation, P.E.Patterson (ed.), 35, 309-14 (1999).

### **PRESENTATIONS AND PROCEEDINGS**

C.R. Nuttelman. "A Senior-Level Biological Engineering Lab Course at the University of Colorado: Experiences and Lessons Learned," presented at the 2011 Annual Meeting of ASEE, Vancouver, BC.

C.R. Nuttelman, M.A. Rice, D.N. Shah, B.D. Fairbanks, and K.S. Anseth. "Photoinitiated Polymerizations for the Synthesis of Hydrogel Niches for Cell Encapsulation and Tissue Engineering," Invited talk, 2007 Materials Research Society Spring Meeting, San Francisco, April 12<sup>th</sup>.

C.R. Nuttelman and K.S. Anseth, "Osteogenic Hydrogels for Controlled Differentiation of Human Mesenchymal Stem Cells." Australasian Society for Biomaterials 16<sup>th</sup> Annual Conference, Rotorua, New Zealand, February 9<sup>th</sup>, 2006.

C.R. Nuttelman, M.C. Tripodi, and K.S. Anseth. "Controlling Viability of Human Mesenchymal Stem Cells Photoencapsulated in Poly(Ethylene Glycol)-Based Hydrogels." Annual Fall Meeting of the Materials Research Society, Boston, MA, December 1<sup>st</sup>, 2004.

C.R. Nuttelman, M.C. Tripodi, K.S. Anseth, "Osteogenic Differentiation of Human Mesenchymal Stem Cells Photoencapsulated in PEG Hydrogels," 7th World Biomaterials Congress, Sydney, Australia, May 2004.

C.R. Nuttelman, G.A. Walker, J.E. Sheren, L.A. Leinwand and K.S. Anseth, "Tissue Engineering of the Aortic Heart Valve: A Cell Biology Approach," Society for Biomaterials Transactions, **24**, 417 (2001).

C.R. Nuttelman, G.A. Walker, J.E. Sheren, L.A. Leinwand and K.S. Anseth, "Tissue Engineering of the Aortic Heart Valve", Society for Heart Valve Disease Biannual Meeting, London, England, June 2001.

C.R. Nuttelman, G.A. Walker, L.A. Leinwand, and K.S. Anseth. "Characterization of valve cells and their interactions with a poly(vinyl alcohol) scaffold", 2001 American Chemical Society National Meeting, San Diego, CA, April 2001.

C.R. Nuttelman. "Tissue Engineering of the Heart Valve," a presentation to the multidisciplinary Biophysics Supergroup of the University of Colorado, January 22, 2001.

C.R. Nuttelman, S.M. Henry, K.S. Anseth, "Surface Modification of Poly(Vinyl Alcohol) Hydrogels Promotes Cell Adhesion," Biomedical Engineering Society National Meeting, Seattle, WA, October 2000.