

ISE 599 Research Methods for Doctoral Students (2 units)

Schedule and Instructor

2 hours, once per week, 10-11:50 on Tuesdays, GER206

Instructor: Randolph Hall

Office: GER 202b

Office Hours: Tu 8:30-9:30 and 12:00-12:30
W 4:00-5:00 (zoom)

Contact Info: rwhall@usc.edu

Catalogue Course Description

Course prepares students to conduct research leading to a PhD dissertation in engineering.

Expanded Course Description

Students will learn methods for conducting research, building a research profile and successfully completing a PhD dissertation. Format will be interactive, with students sharing their progress and offering feedback to each other. Upon completion, students will understand the steps to develop their research proposal for the PhD qualifying exam and the steps to initiate peer reviewed research.

Learning Objectives

- Communicate and manage research profile through CV and online platforms
- Systematic literature review and bibliometrics
- Formulation of research topic and articulating aims and contributions
- Data and software management and sharing
- Research presentations, publications and journal review processes
- Preparing research proposal for qualifying exam
- Completing PhD dissertation and defense
- Mentorship and individual development plan
- Career planning and post-graduation jobs

Prerequisites

Enrollment in PhD program in engineering is required. Course is intended for first and second year students.

Required Texts

[PHinished! Writing a Doctoral Dissertation](#) (First Edition). Tricia M. Mikolon and Cyrus R. Williams III. **(PH) (purchase online)**

[Making the Right Moves](#), A Practical Guide to Scientific Management for Postdocs and New Faculty, Burroughs Wellcome Fund and Howard Hughes Medical Institute. **(MRM) (available at no charge)**

Articles will also be assigned during the course

Grading Breakdown

Assignment	% of Grade
Creating Research Profile	10%
Bibliometric Literature Review	25%
Data/SW Management Plan, Sharing Site	10%
Worksheet for Dissertation	15%
Individual Development Plan	20%
Research Presentation	20%
Total	100%

Course will not have exams or tests.

Grading Scale

- Each assignment will receive a letter grade based on overall quality and completeness of work

Assignment Submission

- Submit by email to instructor on Friday by 5:00 on assigned date.

Classroom Norms

Students are encouraged to

- Participate in discussion
- Share their outside-the-classroom experiences that relate to the topics being presented or discussed
- Respect others by not interrupting or making it hard for other students to express their ideas or learn.
- Come to class prepared for the topic of the day.

Sharing of Course Materials Outside of the Learning Environment

The instructor hereby grants permission to students to share course materials, other than examinations, that he created, subject to the terms of Creative Commons CC BY-NC attribution-ShareAlike license, as specified here:

<https://creativecommons.org/licenses/by-nc/4.0/> .

The course instructor does not grant permission for the distribution of course materials that he created beyond the CC BY-NC license. **Commercial use or posting on commercial websites, such as CourseHero, is not permitted.**

Course Evaluation

Course evaluation occurs at the end of the semester university-wide. It is an important review of students' experience in the class.

Course Schedule: A Weekly Breakdown

Week	Topics/Daily Activities	Readings	Assignments
1	Getting Started – CVs, ORCID, ResearchGate, Academia, Values and Principles, Essence of Research	PH(1,2)	
2	Defining Research Topics, Aims, Contributions, Research Integrity	PH (3)	ORCID ID Online “CV” LinkedIn
3-4	Systematic Literature Review, Bibliometrics, Assessment	PH (4)	
5	Data and Software Management, Metadata, Identifiers and Sharing, Intellectual Property	MRM (8)	
6	Research Presentations		Bibliometric Literature Review
7	Research Publications, Journals, Open Access, Metrics, Attribution and Authorship, Impact	MRM (10)	
8	Research Funding, Sponsors, Proposals, Expectations	MRM(9)	
9	Dissertation Proposal and Qualifying Exam	PH(6,7,8)	Data/SW Management Plan, Sharing Site
10	Dissertation Research, Time Management, Advisement	MRM (6,7)	PH Worksheet 6.1
11	Writing the Dissertation, Format, Defense	PH(11,12)	
12	Individual Development Plan, Mentorship	MRM (5)	
13	Post Graduation: Careers, Products, Impact	PH(13),MRM(1,2)	Individual Development Plan
14	Presentations	N/A	Research Presentations
15	Presentations	N/A	Research Presentations

Statement on Academic Conduct and Support Systems

Academic Integrity:

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Scientific Integrity](#) and [Conflicts of Interest in Research](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.

About the Instructor: Randolph Hall

Deans Professor, Epstein Department of Industrial and
Systems Engineering

Director and Senior Research Fellow

Center for Risk and Economic Analysis of Threats and
Emergencies (CREATE)



As Vice President of Research for 14 1/2 years, Dr. Hall led research initiatives across the university, overseeing research advancement, administration, and research ethics. He led the creation of USC's strategic plans for diversity and inclusion in research and scholarship, research administration systems (TARA), science and technology facilities, and alignment of health programs across the university. His other initiatives included rigor and transparency in the conduct of research, research mentoring, and the reinvention of research practices through creativity and collaboration. As Vice President, Dr. Hall integrated USC's central research offices into a single organization, created the DC Office of Research Advancement and the Center for Excellence in Research, and helped establish many new research centers through competitive external funding.

Dr. Hall has served in numerous national research leadership groups, including the Association of American Universities and the Association of Academic Health Centers. He also served as Board Chair, and currently serves as senior fellow, for the University Industry Demonstration Partnership (an international industry/university membership organization). He is a member of the National Academies Roundtable on Aligning Incentives for Open Science.

As Professor in the Epstein Department of Industrial and Systems Engineering, Dr. Hall's current research focuses on how universities innovate in their practices for education, research, and clinical care, and how they overcome obstacles to change. He is also conducting research on COVID-19 transmission and healthcare delivery. Much of his research is conducted with USC undergraduates. Other research experience includes founder/principal investigator for two national research centers: CREATE and the National Center for Metropolitan Transportation Research (METRANS). As chair of ISE, Hall led Industrial and Systems Engineering to become the first named academic department at the University of Southern California, having risen to a top-15 department nationally, propelled by a major endowment gift from USC Viterbi alum and USC Trustee Daniel Epstein.

Dr. Hall is the author of *Queueing Methods for Services and Manufacturing* and *Managing Innovation Inside Universities*, *Systematic Change for Research, Service and Learning*. He is editor of the *Handbook of Transportation Science; Patient Flow, Reducing Delay in Healthcare Delivery; Handbook of Healthcare System Scheduling*; and co-editor of the forthcoming book *Managing Innovation at the Interface*. He has numerous research publications in the fields of innovation, transportation, highway automation, logistics, healthcare operations, operations research, system engineering, and queueing. Dr. Hall obtained all of his degrees (BS, MS, and PhD) from the University of California at Berkeley in Industrial Engineering and Operations Research and in Civil Engineering.

<https://www.linkedin.com/in/randolph-hall-usc/>
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<https://covid19datasource.usc.edu/>
<https://create.usc.edu/>