BC 8100: Research Methodology
Semester, Year

Class Schedule:
M/W/F, 11:05–11:55AM
107 Architecture Building

Instructor:
Ioannis Brilakis
328 Sustainable Education Building
Phone: 404-894-9881
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Office Hours:
M/W/F, 10:05–10:55AM (before class)
Other times by appointment.

Prerequisites:
Ph.D. Graduate standing.

Recommended Readings:
Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 3rd edition, 2008, J.W. Creswell, Sage Publications Inc., ISBN 978-1412-9655-76

Encyclopedia of Research Design, 1st edition, 2010, N.J. Salkind, Sage Publications Inc., ISBN 978-1412-9612-71

Additional readings will be handed out when necessary. It is expected that assigned readings are done before the class lecture is given. Lecture slides will be posted online as handout pdfs without the answers to in-class questions; notes should be kept during the class lecture using these handouts.

Class Website:
http://www.t-square.gatech.edu, BC-8100-A

Course Objectives:
This is a research design course that teaches the basics of creating credible scientific research plans with examples from construction related research. It is intended for PhD students and highly recommended for those who expect to write a thesis in construction engineering, construction management, or construction technology. The topics introduced are: research designs, literature review, writing strategies, ethical considerations, scope definition, problem statements, research questions, research hypotheses, quantitative methods, qualitative procedures, mixed methods, plagiarism, referencing, publication writing, exploratory and causal research, and others.
Upon completion of this course, the student is expected to be able to:

1) Understand the types and functions of the most commonly used research design approaches in scientific research.
2) Plan and sequence research activities.
3) Customize and optimize common scientific experiment procedures to fit the scope and metrics of a research project.
4) Design literature review processes to derive credible conclusions from credible sources.
5) Understand the very basics of procedures in writing thesis and research proposals from the reviewer's viewpoint.
6) Create customized research writing styles that fit the expectations of the readers and the needs of the research.

Honor Code:
Students are expected to perform class activities in keeping with standards outlined in the Georgia Tech Academic Honor Code. Appropriate action will be taken towards any student suspected of violation of the Honor Code. For any questions involving any Academic Honor Code issues, please do not hesitate to consult the instructor or

www.honor.gatech.edu.

Homework Policy: Homework will be assigned bi-weekly throughout the semester and is an essential part of understanding the lecture material. The issuance and due dates are listed in the course schedule. Homework will be collected at the due date during class time, then graded and returned. Certain difficult questions can be discussed in class upon request. When working on homework, you may discuss the concepts of solving each problem with others, but not the details and answers. Individual work is required, and strongly encouraged as practice for the final exam. You are also allowed (and encouraged) to ask the instructor questions, although you should try to think about the questions before asking. The instructor strongly encourages you to work on extra questions from the readings on your own. Please note that all assignments must be handed in on the due date in class. Assignments handed in after the instructor leaves the classroom will receive an automatic 25% penalty. **Late homework (next day) will be graded for the benefit of the student, but no credit will be given. No exceptions.**

Project Policy: An individual semester project will be assigned to all students. The issuance and due dates of project deliverables are listed in the course schedule. When working on this project, you may discuss the concepts with others, but not the details. Individual work is required. Deliverables will be collected at the due date during class time, then graded and returned. Deliverables handed in after the instructor leaves the classroom will receive an automatic 25% penalty. Late deliverables (next day) will be graded for the benefit of the student, but no credit will be given. No exceptions.

Exam Policy: The final exam will cover material from the readings, in-class (lecture, notes, handouts, slides, etc.), homework, and the project. The exam is open books, open notes, open laptops, and anything else you might consider useful, except for past exams. The exam must be taken, only university excused circumstances will be considered. A grade of zero will be assigned for a missed exam. The exam will take place during the finals week and will cover all material taught in this class. In addition, personal trips must be scheduled around the exam. Make-up exams are not allowed. The exam will not be rescheduled to accommodate early trips home or any other trips of a personal nature. Solutions will not be posted. The exam will not be returned. **Bring to the exam all necessary resources allowed and your Student ID.**

Attendance Policy: Regular attendance is expected and encouraged. Each student is responsible for all material and administrative instructions given during the lecture period. Instructions will not be repeated outside of class. Eating, chewing, sleeping, talking, cell phone use or working on other assignments will lower the student's participation grade and is inappropriate, discourteous, and inexcusable.

Academic Accommodations for Students with Disabilities: Reasonable accommodations will be provided to self-identified students with disabilities who meet the academic and technical requisite to admission or participation in the program of study. Incoming students with apparent course work deficiencies due to a disability should contact the coordinator for Students with Disabilities at 404-894-2564. Consideration may be given to the substitution or modification of certain course requirements – within the limitations imposed by the accreditation criteria for the degree program in which the student is enrolled – and to the extent that such substitutions or modifications of the course or curriculum do not have a net effect of detracting from the quality of the educational experience implied by the course or curriculum designation. Such substitutions or modifications must be approved by the school chair, department head, or college dean, and the Undergraduate Curriculum Committee and/or the Graduate Committee. Additional information can be obtained from the Access Disabled Assistance Program for Tech Students (ADAPTS), Student Service Building, Georgia Institute of Technology, Atlanta, GA, 30332-0285 or call 404-894-2564 (voice), or 404-894-1664 (TDD), or visit www.adapts.gatech.edu.

Course Evaluation:

Criteria	
Class Participation and Attendance	4%
Homework	21%
Project	40%
Final exam	35%
Total	100%

Grading Scale:

Percentage	*Grade*
90.0 – 100.0	A
80.0 – 89.9	B
70.0 – 79.9	C
60.0 – 69.9	D
59.9 or lower	F

TENTATIVE CLASS SCHEDULE*

Day	Date	Topics*	Readings**	Out/Due ***
Mon	23-Aug	Introduction		
Wed	25-Aug	Selecting a Research Design	I-1	
Fri	27-Aug	Selecting a Research Design		Project
Mon	30-Aug	Literature Review	I-2	
Wed	1-Sep	Literature Review		HW1
Fri	3-Sep	Literature Review		
Mon	6-Sep	**Official School Holiday**		
Wed	8-Sep	The Use of Theory	I-3	/HW1
Fri	10-Sep	The Use of Theory		
Mon	13-Sep	Writing Strategies	I-4	
Wed	15-Sep	Writing Strategies		HW2
Fri	17-Sep	Ethical Considerations		
Mon	20-Sep	Defining the Scope	II-5	
Wed	22-Sep	Defining the Scope		/HW2
Fri	24-Sep	Problem Statement	II-6	
Mon	27-Sep	Problem Statement		
Wed	29-Sep	Problem Statement		HW3
Fri	1-Oct	Research Questions	II-7	
Mon	4-Oct	Research Hypotheses		
Wed	6-Oct	Research Hypotheses		/HW3
Fri	8-Oct	Quantitative Methods	II-8	
Mon	11-Oct	Quantitative Methods		/Project
Wed	13-Oct	Quantitative Methods		HW4
Fri	15-Oct	Qualitative Procedures		
Mon	18-Oct	**Student Recess**		
Wed	20-Oct	Qualitative Procedures	II-9	/HW4
Fri	22-Oct	Qualitative Procedures		
Mon	25-Oct	Mixed Methods	II-10	
Wed	27-Oct	Mixed Methods		HW5
Fri	29-Oct	Plagiarism/consequences/examples		
Mon	1-Nov	Referencing	H	
Wed	3-Nov	ASCE guidelines for authors		/HW5
Fri	5-Nov	Journal paper writing		
Mon	8-Nov	Exploratory research	H	
Wed	10-Nov	Causal research		HW6
Fri	12-Nov	Research metrics		
Mon	15-Nov	Sample size determination		
Wed	17-Nov	Presentations		/HW6
Fri	19-Nov	PhD program milestones	H	
Mon	22-Nov	Faculty job searching		
Wed	24-Nov	Teaching classes		HW7
Fri	26-Nov	**None/Thanksgiving Break**		
Mon	29-Nov	Proper use of English	H	
Wed	1-Dec	NSF Proposal writing	H	/HW7
Fri	3-Dec	CII Proposal writing		
Mon	6-Dec	Academic Life		
Wed	8-Dec	Choosing a Ph.D. topic		
Fri	10-Dec	Review Session		/Project

* Topics and dates are not binding and modifications are expected. Speed of coverage is subject to class feedback.

** Numbers separated with a dash indicate chapter of textbook. All handouts (marked H) will be made available on T-Square.

*** Homework and project issuance and due dates. As with additional readings, they will be made available on T-Square. All due dates are fixed, unless otherwise noted in class.