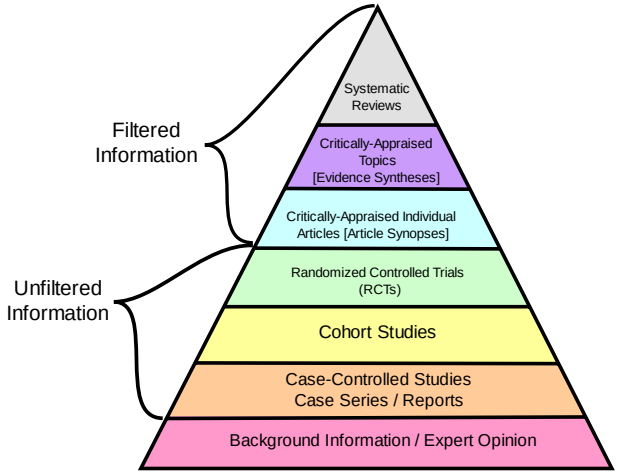
Texas Tech University, College of Architecture
Spring 2021

ARCH: 5366-001 Evidence-Based Architecture

Instructor: Prof: **Saif Haq,** PhD, email: saif.haq@ttu.edu, ROOM 1008F, Phone: 806 834 6317

Office Hours: Tuesdays and Thursdays, 10:00 PM to 11:30 AM **and** by appointment. (If you need to talk to me outside my office hours, feel free to call, email or text. I will do my best to meet with you. Leave message if I am not available. I will respond ASAP)

Class times: TUESDAY and THURSDAY, 3:30 AM – 4:50 PM, ZOOM MEETING



COVID HEADER

This class is categorized as ONLINE and SYNCHRONOUS. This means that we will meet via 'ZOOM' at the day and time specified above. The Instructor will email a link that will allow you to join the zoom meeting.

All students will need to have a good computer with a stable and fast internet access, a microphone, a web-camera, and a set of headphones.

Please find a quiet place for the class. Your camera should be turned **on** and microphones muted unless you want to ask a question.

1 CATALOGUE DESCRIPTION

Historical development and theoretical fundamentals of research based 'evidence' in Architecture. Challenges and opportunities for different stakeholders. Finding and using 'evidence' in design. Case studies.

2 INTRODUCTION

Evidence-based design is a process where the designer, together with an informed client, makes decisions based on the best information available from research, from project evaluations, and from evidence gathered from the operations of the client. This is a new method of practice in architecture, and one being increasingly appreciated by clients and patrons. This class will focus on understanding the relationships between analytical research/evidence and synthesis in architectural design.

3 PRE-REQUISITE

An inquisitive mind. A scholarly mind set. Ability to work hard.

4 LEARNING OUTCOMES

- Ability to search, find, read, and understand (architecturally relevant) research

- Ability to compare and contrast contradictory evidence and choose appropriate ones
- Understand and extract design strategies from peer reviewed research
- Ability to categorize research results into relevant design phases

5 ELECTRONIC MAIL

All students should update their official TTU email accounts and check it every day. Announcements and other information will be sent to this email address. *This will be considered 'official' notification*.

6 OWNERSHIP OF STUDENT WORK:

The College of Architecture reserves the rights to retain, exhibit, and reproduce work submitted by students. Work submitted for grade is the property of the College and remains as such until it is returned to the student. For exhibition purposes, please keep all material available for the instructor at the end of semester.

7 ATTENDANCE POLICY

The College of Architecture at Texas Tech University takes the professional preparation of its students as future architects very seriously. Architectural professionals understand the importance of being present, on time, with work completed. Adherence to these professional attributes begins in architectural education. **Thus, attendance is mandatory**. For a graduate course, "attendance" means more than showing up to class. It means coming to class having read the materials, or done the assigned tasks. It also means having assignments submitted when it is due. Please remember that each class builds on the previous one and being absent in class will seriously hinder comprehension of the materials.

A maximum of two absences will be excused. For each **unexcused** absence after that, 2% will be deducted from the final grade. However, as per college-approved policy, more than five absences (excused or unexcused) will result in a failing grade. In keeping with the same spirit, students who attend all the classes in the semester will be eligible to receive an extra 2% in their final grade.

Each student is expected to attend all lectures and discussions in their entirety. Arriving late to class, working on anything other than class work and departing early can be considered as absences.

Also see:

"Class Attendance", pp. 51, in TTU Undergraduate and Graduate Catalogue, 2020-2021 at https://www.depts.ttu.edu/officialpublications/pdfs/2020_2021_catalog_TTU.pdf

7A. ILLNESS BASED ABSENCE POLICY

If at any time during this semester you feel ill, in the interest of your own health and safety as well as the health and safety of your instructors and classmates, you are encouraged not to attend face-to-face class meetings or events. Please review the steps outlined below that you should follow to ensure your absence for illness will be excused. These steps also apply to not participating in synchronous online class meetings if you feel too ill to do so and missing specified assignment due dates in asynchronous online classes because of illness.

1. If you are ill and think the symptoms might be COVID-19-related:
   a. Call Student Health Services at 806.743.2848 or your health care provider.

b. Self-report as soon as possible using the ttucovid19.ttu.edu management system. This website has specific directions about how to upload documentation from a medical provider and what will happen if your illness renders you unable to participate in classes for more than one week.
c. If your illness is determined to be COVID-19-related, remaining documentation and communication will be handled through the Office of the Dean of Students, including notification to your instructors.
d. If your illness is determined not to be COVID-19-related, please follow steps 2.a-d below.

2. If you are ill and can attribute your symptoms to something other than COVID-19:
   a. If your illness renders you unable to attend face-to-face classes, participate in synchronous online classes, or miss specified assignment due dates in asynchronous online classes, you are encouraged to visit with either Student Health Services at 806.743.2848 or your health care provider. Note that Student Health Services and your own and other health care providers may arrange virtual visits.
   b. During the health provider visit, request a "return to school" note;
   c. E-mail the instructor a picture of that note;
   d. Return to class by the next class period after the date indicated on your note.

Following the steps outlined above helps to keep your instructors informed about your absences and ensures your absence or missing an assignment due date because of illness will be marked excused. You will still be responsible to complete within a week of returning to class any assignments, quizzes, or exams you miss because of illness.

8 WITHDRAWING FROM CLASS

Please withdraw on or before the university drop date. Please do not request a grade of 'I' without documented reasons allowed by the university.

9 ACADEMIC INTEGRITY STATEMENT

Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement that includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures that grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. See statement of ethical principles at
https://www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php

10 PLAGIARISM

See 'Academic Integrity' pp. 52, TTU Undergraduate and Graduate Catalogue, 2020-2021, available at
https://www.depts.ttu.edu/officialpublications/pdfs/2020_2021_catalog_TTU.pdf

11 ADA STATEMENT

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

12 DISCRIMINATION, HARASSMENT, AND SEXUAL VIOLENCE STATEMENT:

Texas Tech University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University. Report any incidents to the Office for Student Rights & Resolution, (806)-742-SAFE (7233) or file a report online at titleix.ttu.edu/students. Faculty and staff members at TTU are committed to connecting you to resources on campus. Some of these available resources are: TTU Student Counseling Center, 806-742-3674, https://www.depts.ttu.edu/scc/(Provides confidential support on campus.) TTU 24-hour Crisis Helpline, 806-742-5555, (Assists students who are experiencing a mental health or interpersonal violence crisis. If you call the helpline, you will speak with a mental health counselor.) Voice of Hope Lubbock Rape Crisis Center, 806-763-7273, voiceofhopelubbock.org (24-hour hotline that provides support for survivors of sexual violence.) The Risk, Intervention, Safety and Education (RISE) Office, 806-742-2110, https://www.depts.ttu.edu/rise/ (Provides a range of resources and support options focused on prevention education and student wellness.) Texas Tech Police Department, 806-742-3931,http://www.depts.ttu.edu/ttpd/ (To report criminal activity that occurs on or near Texas Tech campus.)

13 LGBTQIA STATEMENT

Please see the resources that are available through the Office of LGBTQIA within the Center for Campus Life, Student Union Building Room 201, www.lgbtqia.ttu.edu, 806.742.5433."

14 RELIGIOUS HOLY DAY STATEMENT:

"Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

15 CIVILITY IN THE CLASSROOM STATEMENT:

Texas Tech University is a community of faculty, students, and staff that enjoys an expectation of cooperation, professionalism, and civility during the conduct of all forms of university business, including the conduct of student–student and student–faculty interactions in and out of the classroom. Further, the classroom is a setting in which an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Students who disrupt this classroom mission by rude, sarcastic,

threatening, abusive or obscene language and/or behavior will be subject to appropriate sanctions according to university policy. Likewise, faculty members are expected to maintain the highest standards of professionalism in all interactions with all constituents of the university (www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php).

16 PHOTOGRAPHY AND RECORDING

Please come to class having done a 'fast reading' of the assigned materials. Come prepared to take extensive notes. *Absolutely no recording or photography allowed in the class !!!*

17 REQUIREMENTS AND SUBMISSIONS

You are required to take responsibility for your part in this class. Please visit the online web every day **BEFORE** each class, and make sure that you come prepared. You are required to come to class on time every day; participate in class discussions; learn library search, write two 'mini' reports, make two presentations, submit two illustrated reports and take two exams. PLEASE BRING REQUIRED READINGS TO CLASS. I MAY ASK YOU TO READ CERTAIN PARTS AGAIN.

18 ASSESSMENT

- Library Search
- Two Exams (Midterm and Final)
- Two 'mini reports'
- Two Class Presentation
- Two Review Reports
- Attendance and participation in class (also see 'Attendance Policy', Section 7)

19 GRADE DISTRIBUTION

Midterm exam	20%
Final exam	20%
Library Search	5%
Two 'Mini' Reports	5%
Two Class Presentations	20%
Two Review Reports	30% (15% x 2)

20 GRADING

Grade A: *Superior work*. Exceptional performance strongly exceeding requirements of assignments; initiative proving independent resourcefulness; strong positive attitude toward the work; a growing level of improvement.

Grade B: *Good, above average*. Adequate performance above the norm, accurate and complete, beyond requirements of assignments: good initiative; positive attitude toward the work; improvement showing marks of progress.

Grade C: Average. Mediocre or conservative performance, satisfying all requirements of assignments with a neutral and ordinary level of initiative, attitude, and performance.

Grade D: *Not Acceptable*. Performance not meeting the passing standards of the course. Initiative unacceptable. Work below standard.

Grade F: *Failing*. Ineffective performance not satisfying the requirements of the assignments to an extreme degree. Level of initiative, attitude, and improvement non-existent.

A student who has shown clear and successful improvement throughout the semester may be given the advantage in final grade.

For the purpose of calculating a final grade the following numbering system will be used:
A+ = 97-100, A= 93-96, A- =90-92, B+ = 87-89, B = 83-86, B- = 80-82, C+ = 77-79, C = 73-76, C- = 70-72, D+ = 67-69, D = 63-66, D-=60-62. F=below 60

21 READING MATERIALS

- *An Introduction to Evidence Based Design*, Center for Health Design, Concord, CA, 2008, Volumes 1, 2, and 3.

(These three books are referred to in this syllabus as R1, R2 and R3 respectively)

- Malkin, Jain; *A Visual Reference for Evidence-Based Design*, The Center for Health Design, Concord, CA, 2008 *(referred to as R4)*
- Hamilton, D.K., Watkins, D.H., *Evidence-Based Design for Multiple Building Types*, John Wiley and Sons Inc, New Jersey, 2009 *(referred to as R5)*

22 LECTURE TOPICS AND REQUIRED READINGS

	Month	Date	Day	Lecture Topic	Reading	Comments
1	JAN	21	R	Introduction to Class.	Ulrich, R. (1984). A view through a window may influence recovery from surgery. Science, 224(4647), 420-421.	Instructor will provide this reading in class MINI PROJECT BEGINS (select topics)

2	JAN	26	T	Introduction to Evidence-Based Design (EBD)	R1, Chap 1, p.1-20 Recommended: Viets, E. (2009). "Lessons From Evidence-Based Medicine: What Health Care Designers Can Learn From the Medical Field." *Health Environments Research and Design Journal* 2(2): 73-87. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/viets-lessons%20from%20EVM.pdf Blum, A. (2006). "How Hospital Design Saves Lives". *BloombergBusinessweek. Published Aug 14, 2006* Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/How%20Hospital%20Design%20Saves%20Lives.pdf	
3	JAN	28	R	Finding Relevant	R2, Chap 2	Guest Instructor: Hillary Veeder, Architecture Library Submission: Mini Projects LIBRARY SEARCH BEGINS
4	FEB	02	T	The Case for EBD in Practice and Education	R5, Chapter 1, Chapter 3 and Chapter 16 Vischer, J., Zeisel, J., "Bridging the Gap Between Research and Design". *World Health Design*, July 2008	Read and be prepared to discuss Redman, M., & Kelly, C. (2011). "Staff Centered Design Engages the Elusive Generation Y". *Healthcare Design* (Aug), 2011. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/GenY.pdf
5	FEB	04	R	Trends and Challenges that affect Healthcare and EBD today	pp 20-56, R1	

6	FEB	09	T	Historical Development of EBD	R1, Chap 1, pp. 3-6 RECOMMENDED Hamilton, D. K. (2009). "Is Evidence Based Design a Field." Health Environments Research and Design Journal 3(1): 97-101.	READ THE FOLLOWING AND BE PREPARED TO DISCUSS: Ulrich, R. S., P. Craig Zimring, et al. (2008). "A Review of the Research Literature on Evidence-Based Healthcare Design, Center for Health Design". Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/2008-Zimring%20Ulrich%20Lit%20Review.pdf And Ulrich, R., Quan, X., Zimring, C., Joseph, A., & Choudhary, R. (2004). The role of the physical environment in the hospital of the 21st century: A once-in-a-lifetime opportunity: Robert Wood Johnson Foundation. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/2004-role_physical_env.pdf
7	FEB	11	R	Overview of the Health-Care Delivery System	R1, Chap 2,	LIBRARY SEARCH DUE select papers for term project

8	FEB	16	T	Two points of view of EBD: CEO and Nurses	Blair L. Sadler, J., M. Jennifer R. DuBose, et al. (2008). The Business Case for Building Better Hospitals through Evidence-Based Design. Health care Leadership White Paper Series: Evidence Based Design Resources for Healthcare Executives, Center for Health Design. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/sadler-dubose-2008.pdf Zimring, C., G. Augenbroe, et al. (2008). Implementing Healthcare Excellence: The Vital Role of the CEO in Evidence-Based Design. Evidence-Based Design Resources for Healthcare Executives, Center for Health Design. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/role-of-CEO.pdf Fable Hospital 2.0 The Business Case for Building Better Health Care Facilities, Hastings Center Report, Jan-Feb 2001 link here AND Hendrich, A. and M. Chow (2008). Maximizing The Impact of Nursing Care Quality: A Closer Look at the Hospital Work Environment and the Nurse's Impact on Patient-Care Quality. Evidence-Based Design Resources for Healthcare Executives, Center for Health Design. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/Hendrich-Chow-2008.pdf	
9	FEB	18	R	STUDENTS MINI TOPIC PRESENTATIONS		
10	FEB	23	T	Visiting Lecturer:	Lacy Mangum and Brandon Hartley PARKHILL	

11	FEB	25	R	EBD and Research-**1** INTRODUCTION TO RESEARCH AND RELATIONSHIP TO EBA	R2	
12	MAR	02	T	EBD and Research-**2** NINE COMPONENTS OF RESEARCH	R2 and "Statistics for the non-statistician", chapter 5, in Greenhalgh, T, How to Read a Paper The Basics of Evidence-Based Medicine, 5th edition, 1997	
13	MAR	04	R	EBD and Research-**3** QUALITATIVE AND QUANTITATIVE RESEARCH	R2, special emphasis on pp. 14-15, and Appendix 1	

	17	16	15	14
MAR	MAR	MAR	MAR	MAR
16	18	16	11	09
T	R	T	R	T
Integrating Evidence and Design-1 Introduction to Integration, Multi Disciplinary Teams	MID TERM EXAM	Review	Discussion	EBD and Research-4 NINE TYPES OF RESEARCH DESIGN
Handy Handout Chapter 1. R3				R2

	MAR	18	R	Integrating Evidence and Design-2 Planning, Visioning, Strategic PlanBusiness case and programming	Chapter 2, R3	
18	MAR	23	T	Integrating Evidence and Design-3	Chapter 3, R3 and Chapter 4, R3	
19	MAR	25	R	Configurational Variables: Space Syntax	Haq, S. and Y. Luo (2012). "Space Syntax in Health-Care Facilities Research: A Review." Health Environments Research & Design 5(4). and Haq, S. (2019). Where We Walk Is What We See: Foundational Concepts and Analytical Techniques of Space Syntax. *HERD: Health Environments Research & Design Journal*, *12*(1), 11 25. https://doi.org/10.1177/1937586718812436	

27	26	25	24	23	22	21	20
APR	APR	APR	APR	APR	APR	APR	MAR
22	20	15	13	08	06	01	30
R	T	R	T	R	T	R	T
STUDENT PRESENTATIONS	STUDENT PRESENTATIONS	STUDENT PRESENTATIO	STUDENT PRESENTATIONS	TBA	Designing the Health Care	Wayfinding and Environmental	Space Syntax in practice

28	APR	27	T	STUDENT PRESENTATIONS		
29	APR	29	R	REVIEW		
30	MAY	04	T	NO CLASS		**REVIEW REPORTS AND POWERPOINT FILES DUE**
	MAY	07	F	FINAL EXAM 4:30-7:00 PM		

23 BIBLIOGRAPHY FOR LECTURES

1. Blair L. Sadler, J., M. Jennifer R. DuBose, et al. (2008). The Business Case for Building Better Hospitals through Evidence-Based Design. Health care Leadership White Paper Series: Evidence Based Design Resources for Healthcare Executives, Center for Health Design. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/sadler-dubose-2008.pdf
2. Blum, A. (2006). "How Hospital Design Saves Lives". *Businessweek*. Published Aug 14, 2006, Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/How%20Hospital%20Design%20Saves%20Lives.pdf
3. Redman, M., & Kelly, C. (2011). Staff Centered Design Engages the Elusive Generation Y. *Healthcare Design* (Aug), 2011. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/GenY.pdf
4. Hamilton, D. K. (2009). "Is Evidence Based Design a Field." Health Environments Research and Design Journal 3(1): 97-101
5. Hendrich, A. and M. Chow (2008). Maximizing The Impact of Nursing Care Quality: A Closer Look at the Hospital Work Environment and the Nurse's Impact on Patient-Care Quality. Evidence-Based Design Resources for Healthcare Executives, Center for Health Design. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/Hendrich-Chow-2008.pdf
6. Ulrich, R. S., P. Craig Zimring, et al. (2008). A Review of the Research Literature on Evidence-Based Healthcare Design, Center for Health Design. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/2008-Zimring%20Ulrich%20Lit%20Review.pdf
7. Ulrich, R., Quan, X., Zimring, C., Joseph, A., & Choudhary, R. (2004). The role of the physical environment in the hospital of the 21st century: A once-in-a-lifetime opportunity: Robert Wood Johnson Foundation.

Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/2004-role_physical_env.pdf
8. Viets, E. (2009). "Lessons From Evidence-Based Medicine: What Health Care Designers Can Learn From the Medical Field." *Health Environments Research and Design Journal* 2(2): 73-87. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/viets-lessons%20from%20EVM.pdf
9. Zimring, C., G. Augenbroe, et al. (2008). Implementing Healthcare Excellence: The Vital Role of the CEO in Evidence-Based Design. Evidence-Based Design Resources for Healthcare Executives, Center for Health Design. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/role-of-CEO.pdf

24 PROJECT: MINI REPORTS

Choose any two from the following. Find SIMPLE explanations for them with appropriate examples. Be prepared to explain in class when called by the instructor. (Should not be more than ½ page each)

1. Bell curve
2. Bias
3. Outlier
4. Case study and Randomized Control Trail
5. Chi-square test
6. Factor Analysis
7. Confounding Variables
8. Control and Control Group
9. Correlation and Regression
10. Cross sectional study
11. Longitudinal study
12. Mean, Median, Range
13. Meta-Analysis
14. Multivariate and Univariate
15. Probability, Parametric and non-parametric
16. P-value
17. t-test
18. Standard Deviation
19. Sample and Population
20. Validity: Internal and External
21. Variables: Dependent and Independent
22. Anova and Manova

25 PROJECT: LIBRARY SEARCH

Imagine that you are employed in a firm that specializes in Evidence Based Health-Care.

Your firm wants to build up its in-house library of related peer-reviewed journal articles and has assigned you this task.

Your job is to find two related *peer-reviewed full text* journal papers. These should fulfill the following criteria.

1. They should be well respected research papers.
2. They should have results that can be applied to design, i.e. relates physical/architectural components to health outcomes. In other words you should be able to tell your client how his/her organization would be benefitted if they used the lessons learned from the two articles.
3. They should have illustrations, drawings etc.
4. Research methods should be clearly explained. (Can you do the same research if this was necessary?)

Note: Please be selective about the articles that you choose.

Submission requirements (three paragraphs each, and two pdf versions of papers)

1. Paragraph 1: Describe how you have searched, found, and selected the journal articles; i.e. the 'search', 'retrieval' and 'selection' steps you have taken to get the two articles.
2. Paragraph 2: Explain the research intention, methods and results of the article.
3. Paragraph 3: Clarify why the article is relevant to design and how the results can be applied. (Extra credit will be awarded for graphics, i.e drawings, sketches, photos etc.)
4. 2 articles in pdf format.

Note: if you use inter library loan, then you will be given more time. Please consult with the instructor.

26 PROJECT: CLASS PRESENTATIONS AND ILLUSTRATED REVIEW PAPERS

NOTE: this project should draw upon many of the concepts that has been discussed in class. Please think of this as a collaborative project where we will learn from one another. So feel free to comment on the projects in the spirit of understanding and learning.

Each student will read and critically evaluate two Health Care Research publications and comment on their design implications. This will be as a PowerPoint presentation in class and will be submitted as an illustrated report at the end of the semester.

IMP::Before you begin, please read the following:

1. "Literature Reviews to inform Design", R2, Chap 2, pp. 38-53, Chapter 3, "Getting your bearings: what is this paper about?", Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/Getting%20your%20bearings_%20what%20is%20this%20paper%20about.pdf
2. Chapter 5, "Statistics for the non-statistician" in T. Greenhalagh, (2001) *How to Read a Paper*, London, BMJ Books. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/statistics-for-non-statisticianr.pdf

3. Etchegaray, J. M., Ottenbecher, A. J., Sittig, D. F., & McCoy, A. B. (2012). Understanding Evidence Based Research Methods: t-tests, and Odds Ratios. *Health Environments Research & Design, 6*(1), 143-147. Available at http://www.arch.ttu.edu/people/faculty/haq_s/EBArchitecture/READING/understanding%20evidence%20based%20research.pdf

The journal publications may be the ones that you have identified in the library search project. If these or anyone of them are not appropriate, then please feel free to find another one(s). If necessary, ask the instructor for assistance.

Read your chosen article very carefully and CRITICALLY. Find the relevant citations (articles) that are discussed in the paper (not just quoted). These articles will help you understand the one that you are reading. Once you have analyzed the research paper and read the related journal papers you should be able to answer the following 10 questions (including the sub questions in each):

1. Background of paper
    a. What is the background information that prompted this study?
    b. What are the goals of the paper?
    c. What are the research questions and why are they important?

2. What is/are the hypothesis/hypotheses? If there is no hypothesis, then explain why. Remember that the hypothesis may NOT be explicitly stated in the paper. Sometimes you will have to work back from the results to find the hypothesis. (please refer to class discussions about hypothesis)

3. What were the research methods used? Do not just name the methods. You should describe the sequential steps that were taken by the researcher to conduct this experiment? Explain in your own words in such a way that the experiment can be repeated by a third person (i.e. you). Be explanatory and clear. For example, do not say that "a nursing group was surveyed". Tell us how many were surveyed, how they were selected, who surveyed them, how was it done and so on. (Note: This should be a large section of your paper).
    a. What was the setting of the experiment?
    b. What is 'n'? (Make a table if necessary).
4. What are the independent variables? What are the dependent variables? Name the variables. Define the variables. How were each measured? What was the data collection method of EACH variable? (i.e. how was it collected?) Also provide a table.
5. What are the general findings? (In statistical and descriptive terms). What is the big slogan/headline from this article?
6. How strong are these contributions? In other words, how robust is this research? What is the 'external validity' (Has this research paper been cited, in its turn?) Was the statistical significance high? What is the importance of the journal in which the article appeared? Anything else?
7. What are the limitations of the study? How can you improve the methodology if you were to do the research?
8. What are areas of future study?

9. What are the architectural significances of this study? i.e. how is it useful to architects? At what stage of the design process is the information useful? (Remember the four stages of facility procurement) Find case studies of environments/buildings where information found in the article can be seen. What are the consequences? What is the big DESIGN SLOGAN/HEADLINE from this article? ***THIS IS VERY IMPORTANT***
10. Is there anything special that you want to highlight? Personal anecdote?

IMPORTANT ADDITIONAL TASK: please make a Graphical Abstract that describes your paper. A Graphical Abstract is a single, concise, pictorial OR visual summary of the main findings of the article that captures the content of the article for readers at a single glance. A Graphical Abstract is an image that should allow readers to quickly gain an understanding of the main 'take-home' message of the paper. It MAY be a one-image file and should visualize one process or make one point clear. For ease of browsing, the Graphical Abstract should have a clear start and end, preferably "reading" from top to bottom or left to right. Try to reduce distracting and cluttering elements as much as possible.

Some helpful hints:
Do not read only the headlines. Try to understand the details/nuances of the research methods and the arguments.

Find architectural examples where the lessons have been used or could have been used.

Try out more than one VISUAL and get feedback from your class mates and your professor.

Put page number in your slides and paper

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Grading for the presentation and paper will be based on the following:
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4. Translation of research into architectural application
5. Verbal Presentation. Written clarity
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