
CLRES 2900**Transforming Practice for
Improved Health Care**

Dates: Fall term

Location: 305A Parkvale

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Course Instructors:

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Course objectives:

Transforming Practice for Improved Health Care course will provide an overview of theories, methods, structures, and processes useful for translating evidence-based research findings into practice, and for transforming the practice setting to improve quality and outcomes. The course will provide didactic underpinnings of translation of research findings into practice and transforming practice. Students will be required to develop a research proposal or commercialization plan related to translating evidence-based research findings into practice, or for transforming the clinical practice setting. Students will have the opportunity to subsequently implement their proposal or commercialization plan in the optional CLRES 2910 Translational Research Practicum.

Course Requirements:

Class participation	10%
Midterm preliminary proposal/business plan	30%
Final Exam	30%
Final proposal	30%

Proposal/business plan.

Students will be required to develop a 10 to 15 page commercialization plan or proposal related to translating evidence-based research findings into practice, or for transforming the practice setting to improve quality and outcomes of care.

Research proposals will be evaluated on the clarity of research objectives, scientific significance, methodologic rigor, feasibility, and likelihood that the results of the proposed work will result in improvements to health service delivery.

Commercialization plans will be evaluated in terms of the technical description of the type of product or service to be developed, the evaluation of the potential market, the analysis of competitors, feasibility, and likelihood that the product will result in improvements to health service delivery.

Students will confer with the course director in development of proposal/commercialization plan ideas. Identification of a faculty mentor with expertise in research/product area to be addressed in the proposal/commercialization plan is strongly advised. An outline of the research proposal/commercialization plan is due at midterm and the fully developed proposal/commercialization plan is due at term's end.

Course Mechanics:

2 credits, 2 hours/session, 1 sessions/week, for 16 weeks
Wednesdays 10-12 noon

Required text: None

Readings are placed on CourseWeb.

Session 1	9/3	Introduction: Transforming the Health Care for the 21 st Century	Kapoor
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At the conclusion of this lecture the student will be able to:

1. Describe epidemiologic evidence pertaining to quality shortfalls in the US health care system
2. Discuss the proximate causes of health care crises including: increasing patient complexity, advances in medical science, the structure of health care system, an acute care orientation in the face of an aging and chronically ill population, economic incentives, and underdeveloped information technology.
3. Discuss the Institute of Medicine agenda for transforming the health care system as described in the report: Crossing the Quality Chasm – Six aims for improvement

Required Reading (prior to session):

A New Partnership Between Systems Engineering and Health Care. Chapter 1 in Reid PP, Compton WD, Grossman JH, Fanjiang G (Eds.) Building a Better Delivery System: A New Engineering/Health Care Partnership. Washington DC: The National Academies Press, 2005.

Improving the 21st-Century Health Care System. Chapter 2 in Committee on Quality Health Care in America, Institute of Medicine. Crossing the Quality Chasm. Washington DC: The National Academies Press, 2001.

Session 2	9/10	Models and frameworks for transforming the health care system	Sevick
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At the conclusion of this lecture the student will be able to:

1. Describe the health care environment and methods for identifying common performance “break points.”
2. Discuss the VA QUERI approaches for integrating evidence-based medicine into practice.
3. Compare and contrast the evidence-based practice paradigm with the industrial engineering paradigm, for transforming the service delivery system.
4. Discuss potential pitfalls for implementation of guidelines into clinical practice settings.

Required Reading (prior to session):

VA-QUERI Implementation Guide. Guide for Implementing Evidence-Based Practice and Conducting Implementation Research. <http://www.hsr.d.research.va.gov/queri/implementation/>

Ferlie EB, Shortell SM. Improving the quality of health care in the United Kingdom and the United States: a framework for change. *Milbank Quarterly* 2001; 79(2): 281-315.

Coffey RJ. Engineering and the Health Care System in Reid PP, Compton WD, Grossman JH, Fanjiang G (Eds.) Building a Better Delivery System: A New Engineering/Health Care Partnership. Washington DC: The National Academies Press, 2005, p107-111.

Carayon P. Human Factors and Ergonomics in Health Care and Patient Safety. Chapter 1 in Carayon P. (Ed.) Handbook of Human Factors and Ergonomics in Health Care and Patient Safety. Mahwah, New Jersey: Lawrence Erlbaum Associates, 2007.

Session 3	9/17	Changing financial incentives to improve practice	Mehrotra
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At the conclusion of this lecture the student will be able to:

1. Describe the extent to which the conditions of idealized competition are possible in the health care system.
2. Describe current economic incentives that support an inefficient system of care (e.g. asymmetric information and agency, moral hazard of insurance and current reimbursement, imperfect agency and supplier induced demand).
3. Discuss the evidence regarding alternative approaches for reversing inefficient economic incentives (e.g. pay-for performance, co-payments and deductibles, prospective payment, competitive bidding, and consumer-directed health care).
4. Critically evaluate an empirical evaluation of a pay-for-performance study from UK.

Required readings (prior to session):

Doran T, Fullwood C, Gravelle H, Reeves D, Kontopantelis E, Hiroeh U, Roland M. Pay-for-performance programs in family practices in the United Kingdom. *N Engl J Med*. 2006; 355(4): 375-84.

Campbell S, Reeves D, Kontopantelis E, Middleton E, Sibbald B, Roland M. Quality of Primary Care in England with the Introduction of Pay for Performance. *N Engl J Med* 2007; 357: 181.

Robinson JC. Theory and practice in the design of physician payment incentives. *Milbank Q*. 2001; 79(2): 149-77.

Session 4	9/24	Using decision sciences to improve practice	Roberts
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At the conclusion of this lecture the student will be able to:

1. Discuss the foundations of decision sciences, including the primary elements of decision theory and its normative, descriptive and prescriptive components of research and application.
2. Construct and analyze simple representations of health-related decisions, utilizing two analytical modeling methods.
3. Discuss potential for deviation between normative (“ideal”) decision making and descriptive (“realistic”) decision making through such forces as bounded rationality and bounded execution.
4. Discuss prescriptive interventions (e.g., communications and decision aids and policies) to address deviations between normative and descriptive realities.
5. Apply basic decision science principles to structure and inform more complex health-related decisions, for example those involving multiple decision makers (e.g., patients, providers, administrators).

6. Discuss how the products of decision sciences can support health-related researchers, practitioners, administrators and policy makers in improving quality of care by promoting shared decision making, facilitating effective communication among decision makers, and implementing decision support to reduce clinical errors and facilitate patient self-management.

Demonstration/in class exercise: The role of over-the-counter statins in appropriate self-management of CHD risk.

Required readings (prior to session):

Eggers S, Fishhoff B. (ND). A Behavioral Decision Research Approach Applied to FDA Decision-Making Regarding Over-the-Counter Statins.

A short text on decision theory and modeling (TBD)

A short text outlining basic elements of judgment and decision making, for example, the primary biases and heuristics, time discounting and visceral cues (TBD).

Optional Reading:

Session 5	10/1	<u>An introduction to process improvement methods for enhancing quality of care</u>	Simak
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At the conclusion of this lecture the student will be able to:

1. Describe process improvement tools/approaches common to health care quality improvement (QI) methods.
2. Discuss the common features of health system databases that may be used to identify quality problems, target QI interventions, and assess the effectiveness of QI interventions.
3. Discuss the factors to be considered in designing QI interventions that are feasible/acceptable, and methods to reduce implementation barriers (e.g. stakeholders).
4. Analyze findings, identify key opportunities for improvement, and recommend solutions (for class demonstration projects).
5. Critically evaluate the tools, data, flow chart, intervention and feasibility/acceptability of a QI project that has been implemented within the UPMC.

Demonstration/in class exercise: Improving Processes of Primary Care: Prevention, Phone Care, Diabetes Management, or Hypertension Management

Required readings (prior to session): none

Optional Reading:

Deming, W. Edwards. Out of Crisis. MIT Press edition, 2000.

Wheeler, Donald J. Understanding Variation: The Key to Managing Chaos. 2nd ed. SPC Press. 2000

At the conclusion of this lecture the student will be able to:

1. Discuss the developmental context and uses of clinical practice guidelines
2. Discuss the methods used to develop clinical practice guidelines
3. Describe guideline appraisal instruments, and critically evaluate the quality of a clinical practice guideline
4. Discuss effective methods of guideline dissemination and implementation
5. Critically appraise a study of guideline development and implementation.

Required Reading (prior to session):

Davis DA, Taylor-Vaisey A. Translating guidelines into practice: A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *Can Med Assoc J* 1997; 157(4): 408-416.

Mugford M, Banfield P, O'Hanlon M. Effects of feedback of information on clinical practice: A review. *BMJ* 1991; 303: 398-402.

Graham ID, Calder LA, Hebert PC, Carter AO, Tetroe JM. A comparison of clinical practice guideline appraisal instruments. *International Journal of Technology Assessment in Health Care* 2000; 16(4): 1024-38.

Shaneyfelt TM, Mayo-Smith MF, Rothwangl J. Are guidelines following guidelines? The methodologic quality of clinical practice guidelines in the peer-reviewed medical literature. *JAMA* 1999; 281: 1900-5.

Optional:

Gross PA, Greenfield S, Cretin S, Ferguson J, Grimshaw J, Grol R, Klazinga N, Lorenz W, Meyers GS, Riccobono C, Shoenbaum SC, Schyve P, Shaw C. Optimal methods for guidelines implementation: Conclusions from the Leeds Castle meeting. *Medical Care* 2001; 39(8 suppl 2): II85-92.

Solberg LI. Guideline Implementation: What the literature doesn't tell us. *Jt Comm J Qual Improv* 2002; 26: 525-537.

Weingarten SR. Translating Practice guidelines into patient care: Guidelines at the bedside. *CHEST* 2000; 118: 4S-7S.

Session 7 10/15 Disease management, case management, and collaborative care models for patients with complex chronic disease Rollman

At the conclusion of this lecture the student will be able to:

1. Discuss the epidemiologic data regarding the shifting needs of the U.S. population in terms of chronic disease and multi-morbidity.
2. Highlight the differences between disease management, case management, and collaborative care.
3. Discuss the literature regarding effectiveness of disease/case/collaborative management programs.
4. Discuss the barriers/facilitators to implementing disease/case/collaborative management programs for a variety of common conditions including CHF, depression, and diabetes.

Required readings (prior to session):

Von Korff M, Gruman J, Schaefer J, Curry SJ, Wagner EH. Collaborative management of chronic illness: Essential elements. *Ann Intern Med* 1997; 127: 1097-1102.

Wagner EH. Deconstructing heart failure disease management. *Ann Intern Med* 2004; 141(8): 644-646.

Casalino LP. Disease management and the organization of physician practice. *JAMA* 2005; 293(4): 485-488.

Leeman J, Mark B. The chronic care model versus disease management programs: a transaction cost analysis approach. *Health Care Manage Rev* 2006; 31(1): 18-25.

Piatt GA, Orchard TJ, Emerson S, Simmons D, Songer TJ, Brooks MM, Korytkowski M, Siminerio LM, Ahmad U, Zgibor JC. Translating the chronic care model into the community: results from a randomized controlled trial of a multifaceted diabetes care intervention. *Diabetes Care* 2006; 29(4): 811-817.

Rollman BL, Weinreb L, Korsen N, Schulberg HC. Implementation of guideline-based care for depression in primary care. *Adm Policy Ment Health* 2006; 33(1): 47-57.

Optional Reading:

Robert Wood Johnson Foundation. Improving Chronic Illness Care.
<http://improvingchroniccare.org/change/model/components.html>

Rollman BL, Herbeck Belnap B, Reynolds C, Schulberg H, Shear M. A contemporary protocol for the treatment of panic and generalized anxiety in primary care. *Gen Hosp Psychiatry* 2003; 25: 74-82.

Rothman AA, Wagner EH. Chronic illness management: what is the role of primary care? *Ann Intern Med* 2003; 138(3): 256-261.

DeBusk RF, Miller NH, Parker KM, Bandura A, Kraemer HC, Cher DJ, West JA, Fowler MB, Greenwald G. Care management for low-risk patients with heart failure: a randomized, controlled trial. *Ann Intern Med* 2004; 141: 606-613.

Bodenheimer T, Fernandez A. High and rising health care costs. Part 4: Can costs be controlled while preserving quality? *Ann Intern Med* 2005; 143(1): 26-31

Bower P, Gilbody S, Richards D, Fletcher J, Sutton A. Collaborative care for depression in primary care. Making sense of a complex intervention: systematic review and meta-regression. *British Journal of Psychiatry* 2006; 189: 484-93.

Session 8	10/22	Human Computer Interaction concepts and methods: designing and evaluating technology for the health care sector.	Mankoff
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At the conclusion of this lecture the student will be able to:

1. Discuss the importance of designing technology to solve the right problem, and methods for measuring whether this has been achieved.
2. Identify good and bad technology in use by providers and patients and discuss the implications of problematic technology for successful care.
3. Discuss current research initiatives at Pitt and CMU regarding human computer interaction and related technologies related to health care.
4. Discuss gaps in the literature related to human computer interaction and transformative care and directions for future research..

Required readings (prior to session):

Bickmore T, Gruber A, Picard RW. Establishing the Computer-Patient Working Alliance in Automated Health Behavior Change Interventions. *Patient Educational Counseling* 2005; 59(1): 21-30.

Ren, Y., Kiesler, S., Fussell, S., & Scupelli, P. Trajectories in multiple group coordination: A field study of hospital operating suites. *Proceedings of the 40th Hawaii International Conference on System Sciences*, IEEE Computer Society Press, Big Island, Hawaii, January 2007

Chapter 3 in Hugh Beyer , Karen Holtzblatt, *Contextual design: defining customer-centered systems*, Morgan Kaufmann Publishers Inc., San Francisco, CA, 1998

Selected readings from Norman DA. *Design of Everyday Things*. New York: Doubleday, 1990.

Optional Reading:

Session 9	10/29	Using telehealth technologies to transform practice	Courtney, Parwani
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At the conclusion of this lecture the student will be able to:

Part I: Patient-provider interfaces in telehealth (Courtney)

1. Discuss the development of and potential applications for a variety of patient-provider telehealth technologies including environmental sensors, telemonitoring, and “virtual visits.”
2. Discuss the state-of the-science with regard to each of these technological innovations (e.g., feasibility/acceptability; sensitivity/specificity for identifying risks/events; integration of multiple data sources; efficacy)
3. Discuss the ethical issues to be addressed in patient-provider telehealth technologies (e.g., privacy, safety, consent).
4. Discuss areas for further development/expansion of telehealth (e.g., linking telehealth technologies to the medical record; preparing users for self-management; use of trend data to improve patient management)

Part II: Provider-provider interfaces in telehealth (Parwani)

1. Describe the history of the development of provider-provider telemedicine.
2. Identify the variety of clinical applications for which provider-provider telehealth technologies have been developed (e.g. ophthalmology, dermatology, pathology, etc.)
3. Discuss the development, implementation, and effectiveness of one particular provider-provider telehealth technology and its implications for the service deliver system (telepathology)
4. Discuss the state of translational science with regard to telepathology.

Demonstrations: Telehealth and telepathology applications,

Required Reading (prior to session):

Gilbertson, J. R., J. Ho, et al. Primary histologic diagnosis using automated whole slide imaging: a validation study. *BMC Clin Pathol* 2006; 6: 4.

Massone, C., H. Peter Soyer, et al. Feasibility and diagnostic agreement in teledermatopathology using a virtual slide system. *Hum Pathol* 2007; 38(4): 546-54.

Steinbrook, R. The age of teleradiology. *N Engl J Med* 2007; 357(1): 5-7.

Hebert, M. A., Korabek, B., & Scott, R. E. Moving research into practice: A decision framework for integrating home telehealth into chronic illness care. *International Journal of Medical Informatics* 2006; 75(12), 786-794.

Ni Scanail, C., Carew, S., Barralon, P., Noury, N., Lyons, D., & Lyons, G. M. A review of approaches to mobility telemonitoring of the elderly in their living environment. *Ann Biomed Eng* 2006; 34(4), 547-563.

At the conclusion of this lecture the student will be able to:

1. Describe the features common to many EMRs (CPOE, documentation, care management, decision support, messaging, analysis and reporting, patient-directed functions [less common], billing)
2. Discuss barriers to uptake of EMR by individual practices (cost time, usability, support, inadequate exchange of information between paper and electronic record barriers to cross-institutional care).
3. Discuss the evidence on the effectiveness of EMR.
4. Discuss the organizational ergonomic considerations in designing and implementing an EMR (e.g. how do we optimize the interface between the EMR and features of the health care service delivery system?)
5. Critically evaluate the UPMC EMR from an organizational ergonomic perspective.

Demonstration: EMR from VA and UPMC (Mars, PowerChart, Epicare)

Required Reading (prior to session):

Leape LL, Berwick DM. Five Years After To Err Is Human: What Have We Learned? *JAMA* 2005; 293: 2384-2390

Chapman WW, Christensen LM, Wagner MM, Haug PJ, Ivanov O, Dowling JN, Olszewski RT. Classifying free-text chief complaints into syndromic categories with natural language processing. *AI in Medicine* 2005; 33(1): 31-40.

Optional Reading:

Han YY, Carcillo JA, Venkataraman ST, Clark RSB, Watson RS, Nguyen TC, Bayir H, Orr RA. Unexpected Increased Mortality After Implementation of a Commercially Sold Computerized Physician Order Entry System. *Pediatrics* 2005; 116: 1506-1512

Del Beccaro MA, Jeffries HE, Eisenberg MA, Harry ED. Computerized Provider Order Entry Implementation: No Association With Increased Mortality Rates in an Intensive Care Unit. *Pediatrics* 2006;118;290-295

Session	11/12	Using the Internet to Deliver Care	Rotondi
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At the conclusion of this lecture the student will be able to:

1. Discuss considerations for the development of internet-based health intervention including the mental models of the user, the system, the designer, and the health care professional.
2. Describe methods and processes of conducting a needs assessment for developing internet-based health interventions
3. Discuss perspectives and methods for conducting user-centered design and evaluation of internet-based health intervention.
4. Describe web-based support/management programs to assist families/patients.
5. Discuss the importance of personalizing and tailoring health messages with internet-based care.

6. Critically evaluate the cognitive ergonomic characteristics of an internet-based self-management support program.
7. Describe threats to safety of participants, and the potential for therapeutic effects of the interventions.
8. Discuss why it is not the case that “if you build it they will come and they will benefit.”

Demonstration: HealtheVet, TBI Caregiver Support

Required Reading (prior to session):

Rotondi AJ, Haas GL, Anderson CM, Newhill CE, Spring MB, Ganguli R, Gardner WB, Rosenstock JB, A Clinical Trial to Test the Feasibility of a Telehealth Psychoeducational Intervention for Persons with Schizophrenia and their Families: Intervention and Three-month Findings. *Rehabilitation Psychology* 2005; 50(4): 325-336.

Rotondi AJ, Sinkule J, Haas GL, Spring MB, Litschge CM, Newhill CE, Ganguli R, and Anderson CM, Designing Websites for Persons with Cognitive Deficits: Design and Usability of a Psychoeducational Intervention for Persons with Severe Mental Illness. In Press, 2007, *Journal of Psychological Services*.

Eysenback G, Powell J, Englesakis M, Rizo C, Stern A. Health related virtual communities and electronic support groups: systematic review of the effects of online peer to peer interactions. *BMJ* 2004; 328: bmj.com

Stretcher VJ, Shiffman S, West R. Randomized controlled trial of a web-based computer-tailored smoking cessation program as a supplement to nicotine patch therapy. *Addiction* 2005; 100(5): 682-688.

Session	11/19	<u>Methods for enhancing clinicians' access to information</u>	Monaco
12		NOTE: Today's class will be in Rm 222 Parkvale	

At the conclusion of this lecture the student will be able to:

1. Discuss the literature regarding the unmet information needs of health care professionals.
2. Discuss information retrieval approaches used in other industries to enhance productivity and potential applications to health care.
3. Discuss state-of-the-art technologies to provide clinicians with just-in-time information.
4. Discuss the relationship between decision-making error and information volume.
5. Discuss methods for tailoring health information to the literacy level of the user.

Required readings (prior to session):

Optional Reading:

No Class	11/26	Thanksgiving break
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Session 13	12/3	Behavioral approaches for enhancing self-management	Sevick
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At the conclusion of this lecture the student will be able to:

1. Discuss the importance of self-management as a key consideration in translating evidence into practice.
2. Discuss the key findings of meta-analyses regarding adherence rates and predictors of nonadherence (e.g. regimen complexity, pervasiveness of behavioral requirements of the regimen).
3. Discuss the key findings of meta-analyses regarding the features of effective behavior change intervention approaches.
4. Critically evaluate the behavioral aspects of an intervention study involving translation of research findings into practice.

Required Reading (prior to session):

Committee on Communication for Behavior Change in the 21st Century: Improving the Health of Diverse Populations. Board on Neuroscience and Behavioral Health, Institute of Medicine of the National Academies. Chapter 2 in *Speaking of Health: Assessing Health Communication Strategies for Diverse Populations*. The National Academies Press: Washington, DC., 2002

Norris SL, Lau J, Smith SJ, Schmid CH, Engelgau MM. Self-Management Education for Adults With Type 2 Diabetes: A meta-analysis of the effect on glycemic control. *Diabetes Care*. 2002; 27: 1159-71.

Cramer JA. A systematic Review of Adherence With Medications for Diabetes. *Diabetes Care*. 2004; 27: 1218-24.

DiMatteo MR. Variations in Patients' Adherence to Medical Recommendation: A Quantitative Review of 50 Years of Research. *Med Care* 2004; 42: 200-9.

Gollwitzer PM. (1999). Implementation Intentions: Strong Effects of Simple Plans. *American Psychologist*; 54: 493-503.

Optional Reading:

Session 14	12/10	Use of information technology to enhance patient self-management efforts	Fisher Sevick
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At the conclusion of this lecture the student will be able to:

1. Discuss the information challenges of self-management (e.g. information complexity vs. short term memory capacity, the burden of sustained information vigilance, common decision-making heuristics).
2. Discuss cognitive ergonomic considerations (i.e. human computer interaction) in the development of self-management technologies.
3. Describe current technology-based aides for optimizing self-management.

4. Discuss implications of interactive information technology w/r to confidentiality, safety, information reliability, and issues regarding access of patients to medical record information.
5. Analyze the issues surrounding provision of medical information (e.g. test results) directly to patients over the internet rather than face-to-face.
6. Discuss evidence from the literature on feasibility, acceptability, and effectiveness of self-management IT for improving outcomes.

Demonstration: BalanceLog, iPod, HealthTrack, and VLM

Required Reading (prior to session):

Slack WV. A 67-Year-Old Man Who e-Mails His Physician. *JAMA* 2004; 292(18): 2255-2261.

Hassol A, Walker JM, Kidder D, Rokita K, Young D, Pierdon S, Dietz D, Kuck S, Ortiz E. Patient Experiences and Attitudes about Access to a Patient Electronic Health Care Record and Linked Web Messaging. *Journal of the American Medical Informatics Association* 2004; 11(6): 505-513.

Liederman EM, Lee JC, Baquero VH, Seites PG. Patient-Physician Web Messaging: The Impact of Message Volume and Satisfaction. *JGIM* 2005; 20: 52-57.

Sevick MA, Trauth JM, Piatt GA, Kilbourne AM, Ling BS, Anderson RT, Goodman RM. (In Press). Perspectives on the Patient Experience of Self-Management of Complex Chronic Diseases. *Journal of General Internal Medicine*.

Optional Reading:

Kahneman D, Slovic P, Tversky A. *Judgment under uncertainty: heuristics and biases*. New York : Cambridge University Press, 1982.

Session	12/17	Final Exam
15		Final proposal due
