Course No.	M2173.003400	Lecture No.	001	Course Title (Subtitle)	Neuroscience and Sociality	Credit	3
Representative Instructor	Name	Daeyeol Lee	(post :	)	Homepage	https://neuroscience.jhu.edu/research/faculty/	
	E-mail	daeyeol@jhu.edu			Phone No.		
	Office Hour/Place :						

Prerequisite Course	
*1. Purpose of Course	The purpose of this course is to examine theoretically and empirically the possibility that a rapid advance in neuroscience and AI research might soon fundamentally alter the basic fabric of our society. These changes might be positive and might allow us, for example, to appreciate and even reduce the bias in human judgement, but they can be negative and amplify such biases. The first half of the course will examine how the evolutionary constraints in the human brain might interfere with our ability to find optimal solutions in social conflicts, by reviewing the research in game theory and social neuroscience. The second half of the course will examine the evolutionary roots of our aesthetic preference mostly by focusing on the music perception and production.
*2. Materials and Reference	Birth of Intelligence (2017, Bada; 2020, Oxford University Press) by D. Lee How Music Works (2017, Crown) by David Byrne

*3. Evaluation (%)

Attendance	Assignment	Midterm	Final	Additional Evaluation	Attitude	Other	합계
60%	40%						100

Attendance Policy :	Students who are absent for over 1/3 of the class will receive a grade of 'F' or U' for the course. (Exceptions can be made when the cause of absence is deemed unavoidable by the course instructor.)
Other Remarks :	

*4. Lecture Plan

Lecture 1: Introduction to Brain Sciences
Lecture 2: Neuroeconomics
Lecture 3: Reinforcement Learning (theory)
Lecture 4: Reinforcement Learning (neuroscience)
Lecture 5: Behavioral Game Theory
Lecture 6: Evolution of Altruism
Lecture 7: Neuroscience of Social Decision Making
Lecture 8: Introduction to Neural Network
Lecture 9: Visual System & Deep Learning
Lecture 10: Acoustics and Music Perception: Visual vs. Auditory Arts
Lecture 11: History of Music Technology (20th Century)
Lecture 12: History of Music Technology (21st Century)
Lecture 13: AI, Language, and Music
Lecture 14: Future of Music Production
Lecture 15: Conclusion

5. Additional Notes for Students		
6. Assistance for Students with Disabilities	Class	○ Visual Impairment: Make textbooks(digital textbook, braille textbook, enlarged textbook etc.), Allow note takers ○ Physical Disability: Make textbooks (digital textbook), Allow note takers and assistants ○ Hearing Impairment: Allow note takers and translators, Allow lecture recording ○ Health Impairment: Excuse absence due to health problems, Allow note takers ○ Learning Disability: Allow note takers ○ Intellectual Disability / Autism Spectrum Disorder: Allow note takers and mentors
	Assignment & Evaluation	○ Visual Impairment / Physical Disability / Hearing Impairment / Health Impairment / Learning Disability: Extend assignment deadlines, Offer alternate assignment submission and response method, Extend testing period, Offer alternate testing method, Offer different testing room ○ Intellectual Disability / Autism Spectrum Disorder: Offer individualized assignments and alternative evaluations
	Others	Students who take this course can get appropriate level of support service including the support listed above depending on the students′ individual characteristics and needs through consultation with professors and the Support Center for Students with Disabilities. If you have any questions concerning support service for students with disabilities you can contact Professor ***(Contact Information) or Support Center for Students with Disabilities (02-880-8787).

교과목번호	4190.415	강좌번호	001	교과목명 (부제명)	컴퓨터 보안	학점	3
대표교수	성명	김태수	(직 :	부교수/조지아텍	)	Homepage	https://taesoo.kim/
	E-mail	taesoo@gatech.edu				전화번호	+1-617-794-5290
	면담시간/장소 :	Zoom/TBD					

선이수교과목	
*1. 수업목표	이 과목은 컴퓨터의 보안, 특히 취약점의 특성을 이해하고 공격/방어하는 구체적인 기술을 실습을 통하여 가르친다. 실습은 컴퓨터 해킹 대회의 형식, Capture-The-Flag (CTF)을 따라 배우게 되며 매주 주제별 강의, 튜토리얼 및 실습으로 이루어 진다. 기본적인 컴퓨터 보안 이슈를 시작으로 최신 이슈까지 다양한 형태의 공격 및 방어 방법을 배우게 될 것이며, 개인 과제를 통해 구체적인 기술들을 직접 배우게 될 것으로 기대한다.
*2. 교재 및 참고문헌	Book: Information Security Lab (free/online)https://tc.gts3.org/cs6265/2020/tut/ web site: https://tc.gts3.org/cs6265/2020-winter/ calendar: https://tc.gts3.org/cs6265/2020-winter/cal.html

*3. 평가방법(%)	출석	과제	중간	기말	수시평가	태도	기타	합계
	0	90	0	0	0	10	0	100
	출석 규정 :	수업일수의 1/3을 초과하여 결석하면 성적은 "F" 또는 "U"가 됨(담당교수가 불가피한 결석으로 인정하는 경우는 예외로 할 수 있음)						
	기타의 비고 :							

*4. 강의계획		Week1. Lab: Bomb Lab1 (Tut01) Week2. Lab: Bomb Lab2 / Shellcode (Tut02, 1h video) Week3. Lab: Stack Overflow (Tut03-1/Tut03-2, 2h video) Week4. Lab: Bypassing Stack Protection (Tut04, 1h video) Week5. Lab: Bypassing DEP/ASLR (Tut05, 1h video) Week6. Lab: Return-oriented Programming (Tut06-1, Tut06-2, 2h video) Week7. Lab: Remote Attacks (Tut07-1, Tut07-2, 2h video) Week8. Lab: Miscellaneous Topics (Tut08, 1h video) (optional) Week9. Lab: Exploiting Heap Bugs (Tut09-1, Tut09-2, 2h video)
5. 수강생 참고사항		
6. 장애학생 지원사항	강의 수강 관련	○ 시각장애: 교재 제작(디지털교재, 점자교재, 확대교재 등), 대필도우미 허용 ○ 지체장애: 교재 제작(디지털교재), 대필도우미 및 수업보조 도우미 허용 ○ 청각장애: 대필 및 문자통역 도우미 활동 허용, 강의 녹취 허용 ○ 건강장애: 질병 등으로 인한 결석에 대한 출석 인정, 대필도우미 허용 ○ 학습장애: 대필도우미 허용 ○ 지적장애/자폐성장애: 대필도우미 및 수업 멘토 허용
	과제 및 평가 관련	○ 시각장애/지체장애/청각장애/건강장애/학습장애: 과제 제출기한 연장, 과제 제출 및 응답 방식의 조정, 평가 시간 연장, 평가 문항 제시 및 응답 방식의 조정, 별도 고사실 제공 ○ 지적장애/자폐성장애: 개별화 과제 제출 및 대체 평가 실시
	비고	본 강의를 수강하는 장애학생들에게는 이상의 지원 서비스 이외에도 장애학생 개개인의 특성과 요구에 따라, 지도교수 및 장애학생지원센터와의 상담을 통하여 적절한 수준의 지원 서비스를 제공합니다. 장애학생에 대한 지원서비스와 관련하여 문의사항이 있는 학생들은 담당교수 ***(연락처) 혹은 장애학생지원센터(02-880-8787)로 문의바랍니다.

Course No.	4190.415	Lecture No.	001	Course Title (Subtitle)	Computer Security	Credit	3

Representative Instructor	Name	Taesoo Kim	(post : Assistant professor at Georgia Tech)	Homepage	https://taesoo.kim/
	E-mail	taesoo@gatech.edu		Phone No.	+1-617-794-5290
	Office Hour/Place :	Zoom/TBD			

Prerequisite Course	
*1. Purpose of Course	This course covers advanced techniques for writing exploits and patching vulnerabilities, taught through an intense, hands-on security laboratory. A significant part of this course involves solving Capture-The-Flag (CTF) and discussing strategies for solving such problems. This course covers a variety of topics including (but not limited to) reverse engineering, exploitation and binary analysis.
*2. Materials and Reference	Book: Information Security Lab (free/online)https://tc.gts3.org/cs6265/2020/tut/ web site: https://tc.gts3.org/cs6265/2020-winter/ calendar: https://tc.gts3.org/cs6265/2020-winter/cal.html

*3. Evaluation (%)

Attendance	Assignment	Midterm	Final	Additional Evaluation	Attitude	Other	Total
0	90	0	0	0	10	0	100

Attendance Policy :	Students who are absent for over 1/3 of the class will receive a grade of 'F' or U' for the course. (Exceptions can be made when the cause of absence is deemed unavoidable by the course instructor.)
Other Remarks :	

<table>
<tr><td colspan="2">*4. Lecture Plan</td><td>Week1. Lab: Bomb Lab1 (Tut01)
Week2. Lab: Bomb Lab2 / Shellcode (Tut02, 1h video)
Week3. Lab: Stack Overflow (Tut03-1/Tut03-2, 2h video)
Week4. Lab: Bypassing Stack Protection (Tut04, 1h video)
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Week6. Lab: Return-oriented Programming (Tut06-1, Tut06-2, 2h video)
Week7. Lab: Remote Attacks (Tut07-1, Tut07-2, 2h video)
Week8. Lab: Miscellaneous Topics (Tut08, 1h video)
(optional) Week9. Lab: Exploiting Heap Bugs (Tut09-1, Tut09-2, 2h video)</td></tr>
<tr><td colspan="2">5. Additional Notes for Students</td><td></td></tr>
<tr><td rowspan="3">6. Assistance for Students with Disabilities</td><td>Class</td><td>○ Visual Impairment: Make textbooks(digital textbook, braille textbook, enlarged textbook etc.), Allow note takers
○ Physical Disability: Make textbooks (digital textbook), Allow note takers and assistants
○ Hearing Impairment: Allow note takers and translators, Allow lecture recording
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<tr><td>Assignment & Evaluation</td><td>○ Visual Impairment / Physical Disability / Hearing Impairment / Health Impairment / Learning Disability: Extend assignment deadlines, Offer alternate assignment submission and response method, Extend testing period, Offer alternate testing method, Offer different testing room
○ Intellectual Disability / Autism Spectrum Disorder: Offer individualized assignments and alternative evaluations</td></tr>
<tr><td>Others</td><td>Students who take this course can get appropriate level of support service including the support listed above depending on the students′ individual characteristics and needs through consultation with professors and the Support Center for Students with Disabilities. If you have any questions concerning support service for students with disabilities you can contact Professor ***(Contact Information) or Support Center for Students with Disabilities (02-880-8787).</td></tr>
</table>

Course No.	538.405	Lecture No.	001	Course Title (Subtitle)	Industrial Ecology	Credit	3-2-2
Representative Instructor	Name	Sangwon Suh	(post :)	Homepage	https://bren.ucsb.edu/		
	E-mail	suh@bren.ucsb.edu		Phone No.	(805) 893-7185		
	Office Hour/Place :	3422 Bren Hall Bren School of Environmental Science and Management University of California Santa Barbara, CA 93106-5131					

Prerequisite Course	
*1. Purpose of Course	Industrial ecology concerns the interactions between and within the industrial systems and the environment through the exchange of materials and energy. It takes a systems perspective in seeking the answers to such questions as how to improve resource efficiency; how to minimize waste generation; which material to use considering their costs, supply security, and criticality; and how to design an industrial process to minimize its resource and environmental risks. The objective of this class is to introduce the concept and analytical tools of industrial ecology. Taking this course, students are expected to understand the fundamental concepts of industrial ecology, the current status of the environment and natural resources, understand the principal interactions between technology and the environment, and be able to apply the basic tools and models used in industrial ecology.
*2. Materials and Reference	• Frosch, R.A. and N. Gallopoulos. 1989. Strategies for manufacturing. Scientific American 261(3):144-152 (download). • Crutzen, P.J., 2006. The "anthropocene". In Earth system science in the anthropocene (pp. 13-18). Springer, Berlin, Heidelberg. (download). • Fischer-Kowalski, M., Haberl, H. 2002. Sustainable development: socio-economic metabolism and colonization of nature, International Social Science Journal. (download). • Graedel, T. 2019. Material Flow Analysis from Origin to Evolution, Environmental Science and Technology, 53, 12188-12196. Chapter 9: Advanced Life Cycle Models. In Matthew, S., Hendrickson, C., Matthews, D. Life Cycle Assessment. LCAtextbook (download).

*3. Evaluation (%)

Attendance	Assignment	Midterm	Final	Additional Evaluation	Attitude	Other	Total
	20	30	30			20	100

Attendance Policy :	Students who are absent for over 1/3 of the class will receive a grade of 'F' or U' for the course. (Exceptions can be made when the cause of absence is deemed unavoidable by the course instructor.)
Other Remarks :	

*4. Lecture Plan

Industrial ecology views an industrial system as an organism that takes materials and energy from the environment, processes and uses them, leaves some of them in the system, and discards the rest as waste and pollutant back to the environment. This view provides a framework with which the interactions between industry and the environment can be understood and analyzed. In this course we will focus on three themes: (1) key concepts of industrial ecology; (2) analytical tools and metrics; and (3) the decision context to which industrial ecology can formulate a framework of analysis. The course consists of lecture, in-class discussion, in-class, and student presentation (individual and group, depending on the enrollment).

Week 1. Anthropocene and industrial ecosystem
Week 2. Socio-economic metabolism
Week 3. Natural resources I: fossil fuels
Week 4. Natural resources II: metals and minerals
Week 5. Natural resources III: land and renewables
Week 6. Assessing industrial ecosystems I: Life Cycle Assessment
Assessing industrial ecosystems II: Material Flow Analysis
Week 7. Sustainability

5. Additional Notes for Students		
6. Assistance for Students with Disabilities	Class	○ Visual Impairment: Make textbooks(digital textbook, braille textbook, enlarged textbook etc.), Allow note takers ○ Physical Disability: Make textbooks (digital textbook), Allow note takers and assistants ○ Hearing Impairment: Allow note takers and translators, Allow lecture recording ○ Health Impairment: Excuse absence due to health problems, Allow note takers ○ Learning Disability: Allow note takers ○ Intellectual Disability / Autism Spectrum Disorder: Allow note takers and mentors
	Assignment & Evaluation	○ Visual Impairment / Physical Disability / Hearing Impairment / Health Impairment / Learning Disability: Extend assignment deadlines, Offer alternate assignment submission and response method, Extend testing period, Offer alternate testing method, Offer different testing room ○ Intellectual Disability / Autism Spectrum Disorder: Offer individualized assignments and alternative evaluations
	Others	Students who take this course can get appropriate level of support service including the support listed above depending on the students′ individual characteristics and needs through consultation with professors and the Support Center for Students with Disabilities. If you have any questions concerning support service for students with disabilities you can contact Professor ***(Contact Information) or Support Center for Students with Disabilities (02-880-8787).

History of Early China: Texts and Artifacts

Digital Winter Session 2020/21
College of Liberal Studies, Seoul National University

Professor Vincent S. Leung (梁萃行)
Head and Associate Professor, Lingnan University Hong Kong
Visiting Lecturer, Seoul National University
Email: vincentleung@ln.edu.hk

In ancient China, we have one of the oldest civilizations in all of world history. From the beginning of agriculture to the creation of empires more than two millennia ago, it gave rise to a diverse set of socio-political, economic, and cultural institutions that would come to have great impact on the history of East Asia and the world at large. This course is an introduction to this history of ancient China. Specifically, we will focus on the rise of empires in the long first millennium BCE from the collapse of the Bronze Age aristocratic order to the rise of the Qin and Han empires. We will examine in detail some of the most important and latest archaeological discoveries; we will also closely read classical texts from early China, including the Confucian *Analects*, to understand the fierce intellectual debates that attended the contentious emergence of empires. With both material artifacts and classical texts, we will study the complex historical process that led to the rise of empires in early China in the first millennium BCE.

Textbooks and Readings

The two main textbooks for this course are:

- John S. Major and Constance A. Cook. *Ancient China: A History*. Routledge, 2017.
- *Readings in Classical Chinese Philosophy*, edited by Philip J. Ivanhoe and Bryan W. Van Norden. Second edition. Hackett, 2006.

Additional assigned readings will be distributed to you electronically.

Class schedule

This class will start on January 4 and end on February 10. It will meet on Monday, Wednesday, and Friday, from 12:00 to 2:40 pm (with a 10-minute break) on Zoom. For the detailed schedule, please see the last part of this syllabus.

Assessments

Your course grade is divided into the following five components:

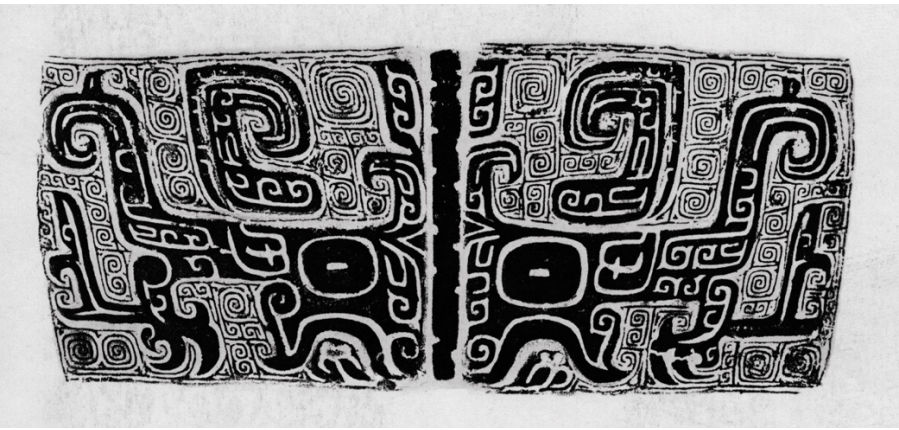
- Class Attendance, 15%
- Class Participation, 10%
- Response Papers (3 papers @ 5% each), 15%
- Student Presentation, 15%
- Final Test, 15%
- Final Essay, 30%

Final grades will be converted from your numerical total to a letter grade as per this scale:

93% to 100% = A | 90% to 92.99% = A- | 87% to 89.99% = B+ | 83% to 86.99% = B | 80% to 82.99% = B- | 77% to 79.99% = C+ | 73% to 76.99% = C | 70% to 72.99% = C- | 67% to 69.99% = D+ | 60% to 66.99% = D | 59.99% or below = F

Academic Integrity and Plagiarism

Acts of academic dishonesty, including plagiarism, namely the uncredited use of the ideas or writings of others, are serious offense with grave consequences. You must absolutely avoid it in all the work that you do in this course. Should you commit acts of academic dishonesty, the teaching staff will strictly follow the guidelines laid out by the university with serious, significant consequences including a failed grade for an assignment or the entire course.



Taotie design popularly seen on bronze vessels
of the Shang dynasty (circa 1600 – 1046 BCE).
From *Animals from Chinese History*, ed. Roel Sterckx (Cambridge, 2018)

Class Schedule and Topics (in brief)

Week 1

January 4 (Mon) Prehistory and Neolithic Cultures

January 6 (Wed) The Early Bronze Age and the Shang dynasty

January 8 (Fri) The Western Zhou dynasty

Week 2

January 11 (Mon) The Spring and Autumn Period

January 13 (Wed) Confucius and the *Analects*

January 15 (Fri) The First Critic of Confucius: *Mozi*

Week 3

January 18 (Mon) The Warring States Period

January 20 (Wed) "Daoism": *Laozi* and the *Zhuangzi*

January 22 (Fri) Quarrelsome Confucians: *Mengzi* and *Xunzi*

Week 4

January 27 (Wed) *The Book of Lord Shang* and the Rise of the Qin State

January 29 (Fri) *Han Feizi*, the First Emperor, and the Qin Empire

Week 5

February 1 (Mon) Early Han Archaeology and Political Thought

February 3 (Wed) The Emperor and the Grand Historian: Sima Qian's *Records of the Grand Historian*

Week 6

February 8 (Mon) The End of the Han empire

February 10 (Wed) Student presentations

Class Schedule, Topics, and Readings (in detail)

Week 1

January 4 (Mon) Prehistory and Neolithic Cultures

- *Ancient China: A History* (***ACAH* hereafter**): Chapters 1, 2 and 3, "Introduction to Ancient China," "Geography, Climate, and the Physical Setting of Chinese History," and "The Neolithic Era and the Jade Age," pages 1 – 58

January 6 (Wed) The Early Bronze Age and the Shang dynasty

- *ACAH*, Chapter 4 and 5, "The Early Bronze Age" and "The Shang Dynasty," pages 59 - 98

January 8 (Fri) The Western Zhou dynasty

- *ACAH,* Chapter 6, "The Western Zhou Period," pages 99 - 124

Week 2

January 11 (Mon) The Spring and Autumn Period

- *ACAH*, Chapter 7, "The Spring and Autumn Period," pages 125 - 145

January 13 (Wed) Confucius and the *Analects*

- *Readings in Classical Chinese Philosophy* (***RCCP* hereafter**), *Kongzi* (*Confucius*) "The *Analects*," pages 1-58

- *Response Paper #1 due at 12:00 noon*

January 15 (Fri) The First Critic of Confucius: *Mozi*

- *RCCP*, *Mozi*, pages 59 – 114

Week 3

January 18 (Mon) The Warring States Period

- *ACAH*, Chapter 8, "The Warring States Period," pages 146 - 178

January 20 (Wed) "Daoism": *Laozi* and the *Zhuangzi*

- *RCCP*, Chapter 4, *Laozi* ("*The Daodejing*"), pages 161 – 206

- *Response Paper #2 due at 12:00 noon*

January 22 (Fri) Quarrelsome Confucians: *Mengzi* and *Xunzi*

- *RCCP,* Chapters 3 and 6, *Mengzi* ("*Mencius*") and *Xunzi*, pages 115 – 160, and 255 – 310.

Week 4

January 27 (Wed) *The Book of Lord Shang* and the Rise of the Qin State

- *ACAH*, Chapter 9, "The Rise and Fall of the Qin dynasty," pages 179-196
- Selections from *The Book of Lord Shang* (to-be-determined)

- *Response Paper #3 due at 12:00 noon*

January 29 (Fri) *Han Feizi*, the First Emperor, and the Qin Empire

- *RCCP*, Chapter 7, *Han Feizi*, pages 311 - 362

Week 5

February 1 (Mon) Early Han Archaeology and Political Thought

- *ACAH*, Chapter 10, "The Western Han dynasty through the Reign of Emperor Wu," pages 197-231
- Lu Jia, "The Basis of the Way," *Sources of Chinese Tradition*, eds. de Bary, et al.
- Jia Yi, "The Faults of Qin," *Sources of Chinese Tradition*, eds. de Bary, et al.
- "Finding the Source of the Way," Chapter 1 of Liu An, ed., *Masters of Huainan*

- "The Responsibilities of Rulership," by Dong Zhongshu, in the *Luxuriant Dew of the Spring and Autumn Annals*

February 3 (Wed) Emperor and the Grand Historian: Sima Qian's *Records of the Grand Historian*

- Sima Qian, "Letter in Reply to Ren An" and "The Biography of Boyi and Shu Qi," *An Anthology of Chinese Literature: Beginnings to 1911,* trans. and ed. Stephen Owen

Week 6

February 8 (Mon) The End of the Han empire

- *ACAH*, Chapters 11 and 12, "The Later Western Han and the Wang Mang Interregnum" and "The Han Restoration, the Eastern Han dynasty, and the Three Kingdoms Period," pages 232 – 270
- *Commandments of Lord Lao* and *The Divine Incantations Scripture*
- "Uprisings," *Chinese Civilization: A Sourcebook,* second edition, ed. Patricia Ebrey
- Selections from Mouzi's *Disposing of Errors*

February 10 (Wed) Student presentations

Syllabus

[Course Name] Structural Wind Engineering

Department:

Instructor: Yukio Tamura

REFERENCES (not required)**:**

- Wind Resistance Design for Buildings 건축물의 내풍설계 (한림원) by T. Ohkuma, J. Kanda and Y. Tamura, originally 建築物の耐風設計 (鹿島出版, 1996, 2004)
- Advanced Structural Wind engineering, Ed. Y. Tamura and A. Kareem, Springer (2013)
- Wind Effects on Structures, E. Simiu and R.H. Scanlan, John Wiley & Sons, Inc. (1986)
- The Designer's Guide to Wind Loading of Building Structures (Part 1), N.J. Cook, Butterworths (1985)
- Wind Effects on Buildings, Vol.1 Design Applications, T.V. Lawson, Applied Science Publishers (1980)

COURSE DESCRIPTION: This course offers state-of-the-art knowledge and information on various issues related to structural wind engineering, including some sophisticated techniques and mathematical tools for solving complicated and difficult problems. It also discusses basic matters such as wind climates, flow around bluff bodies and so on, pointing out things left unnoticed from various different angles. The course is given in English.

PREREQUISITES: Building Vibrations; (Random Vibrations); Statistics; Structural Dynamics; and Primitive Fluid dynamics

MAIN COURSE OBJECTIVE: The importance of careful observation of wind-induced phenomena, deep consideration and creation of mathematical models is demonstrated throughout the course to reach understanding of the mechanisms of those phenomena. Students should also learn the fact that the wind engineering knowledge itself is not so important but the process of getting the knowledge is more important and can provide additional information, additional skills, and additional abilities to you. If students could realize the above facts, the main objective of this course would be accomplished.

INTENDED TOPICS
Wind Climates
Wind-induced Damage to Buildings & Structures
Wind-induced Vibrations of Buildings & Structures
Statistical Description of Turbulent Wind
Spatio-temporal Expressions of Wind Fluctuations and Scale
Atmospheric Boundary Layer and Wind Speed Profile
Evaluation of Design Wind Speed
Flow around Bluff Bodies
Pressure Distributions on Bluff Bodies
Navier-Stokes Equations

Causes of Wind Forces
Reynolds Number and Flow Patterns
Vortices Shed from Bluff Bodies
Static Wind Forces on Bluff Bodies
Velocity Pressure and Wind Pressure Coefficient
Internal Pressure Coefficient and External Wind Pressure Coefficient
Temporal Variation of Wind Pressures and Wind Forces
Quasi-steady Assumption and Fluctuating Wind Pressures
Spatial Scale of Pressure Fluctuation
Temporal Variation of Internal Pressures
Line-like Structures and Lattice Structures
Motion-induced Forces and Aerodynamic Damping
Fluctuating Wind Forces acting on Basic Sectional Shapes
Wind Load Effects and Design Wind Loads
Static Wind Load, Dynamic Wind Load, and Quasi-static Wind Load
Wind Resistant Design of Buildings and Relevant Issues
Aerodynamic and Response Characteristics of Tall Buildings with Various Configurations
Pedestrian-level Wind Characteristics around Tall Buildings with Various Configurations
Universal Equivalent Static Wind Load on Long-span Roof Structures
Damping in Buildings for Wind Resistant Design and Evaluation Techniques
Damping Devices to Suppress Wind-induced Vibrations
Mathematical Models for Understanding of Phenomena
The Most Efficient Technique for Observing Random Fields (POD)
Wind Force Correlation and Wind Force Combination
Non-elastic Wind-induced Responses of Tall Buildings
Human Comfort and Habitability of Buildings to Vibrations
Monitoring Techniques in Wind Engineering

STUDENT OUTCOME:
The students can acquire sufficient knowledge and skill to work or conduct research at the forefront of the technology in wind-resistant design and wind hazard mitigation.

HOMEWORK:

GRADING: Attendance 40% / Homework 30% / Final exam 30%

COURSE INFORMATION

Course title:	Topics in Industrial Engineering (Revenue Management and Pricing)		
Course keywords:	Pricing, revenue management, optimization		
Course number:	406.559	Credits:	3.0
Semester:	Winter 2020	Class location:	Virtual (Online)
Section(s):		Class times:	MWF 12:00-14:30 KST
Course duration:	Dec 21, 2020 – Jan 22, 2021		
Class homepage:	SNU eTL <https://etl.snu.ac.kr/login.php>		

INSTRUCTOR AND TA INFORMATION

Instructor:	Tim Huh (허웅희)
Primary affiliation:	Sauder School of Business, University of British Columbia
Email:	Tim.huh@sauder.ubc.ca
TA:	Jongwook Lim (PhD student, Industrial Engineering)
Email:	jook0506@snu.ac.kr

COURSE OVERVIEW

Revenue management is an emerging area dealing with applying analytics tools to make decisions regarding product availability and pricing. Its goal is "selling the right product to the right customer at the right time for the right price." Many industries use revenue management tools to maximize the return on their limited supply of products. Airlines use revenue management to decide what fare classes should remain open and what fare classes should be closed. Hotels use revenue management to choose the room rates and to determine how much to overbook. Rental car agencies use revenue management to choose which cars to use for which requests. Restaurants use revenue management to decide what portion of their tables should be reserved for walk-ins. This course focuses on analytical tools related to capacity allocation and pricing.

TEXTBOOK AND READING MATERIAL

Recommended: R.L. Phillips, *Pricing and Revenue Optimization*, Stanford University Press, 2005, ISBN 0-8047-4698-2. (Note: A second edition will be released in March 2021.)

WEEKLY TOPICS (SUBJECT TO CHANGE)

Week 1	Introduction; dynamic booking control; two-fare capacity allocation
Week 2	Multi-fare capacity allocation; dynamic programming; heuristics for multi-fare capacity allocation; network revenue management
Week 3	Network revenue management (continued); Linear programming formulations
Week 4	Pricing; pricing optimization; consumer choice model
Week 5	Demand learning; Presentations

PRE-REQUISITES

Students are expected to have a working knowledge of probability, optimization, and stochastic processes at the level typically covered in the second-year or third-year undergraduate courses. The

students should have mathematical maturity since students will need to read and understand proofs.

GRADING POLICY

Summary

Component	Weight
Homework	25%
Quizzes	50%
Presentation	35%
Class participation	15%
Total	100%

Assessment Schedule

Homework #1	Thurs Dec 24 @ noon KST
Homework #2	Thurs Dec 31 @ noon KST
Quiz #1	Wed Jan 6 in class
Homework #3	Sat Jan 9 @ noon KST
Homework #4	Sat Jan 16 @ noon KST
Quiz #2	Mon Jan 18 in class
Presentation	Week of Jan 18 in class

Presentation

Students may work individually or as a group of 2 or 3. The students will make a presentation in-class and submit a PDF version of the slides.

- Option 1 (Paper presentation). Choose a published paper after consulting with the instructor, and prepare a presentation for your class. It should be accessible to the students in the class. The contribution and model should be presented, along with sufficient details regarding methodological approaches and technical analysis.

- Option 2 (Research proposal). Choose a topic of interest related to the course topic, and prepare a research proposal. It must include motivation, literature review, methodological approach, and intended contribution.

Doctoral students are strongly encouraged to choose Option 2.

ACADEMIC INTEGRITY

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply.

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Course No.	M3285.000100	Lecture No.	001	Course Title (Subtitle)	Breeding for Quantitative Traits in Plants	Credit	3-3-0

Representative Instructor					
Name	Rex Bernardo (post :)	Homepage	bernardo-group.org		
E-mail	bernardo@umn.edu	Phone No.			
Office Hour/Place :	Online, by appointment				

Prerequisite Course	
*1. Purpose of Course	Most economically important traits in crops are quantitative rather than qualitative. It is therefore fitting that we study how quantitative genetics applies to plant breeding. The class goals and expectations are for each student to: 1. Understand fundamental concepts of population and quantitative genetics; 2. Explore how quantitative genetics principles can help a plant breeder design and implement a breeding program; and 3. Appreciate the theory, experimental approaches, and evidence that form the basis for these concepts and breeding strategies.
*2. Materials and Reference	Bernardo, R. 2020. **Breeding for Quantitative Traits in Plants.** 3rd edition, Stemma Press, Woodbury, Minnesota, USA (**required** textbook, available at http://stemmapress.com/)

*3. Evaluation (%)

Attendance	Assignment	Midterm	Final	Additional Evaluation	Attitude	Other	Total
15	0	0	25	50 (quizzes)	10	0	100

Attendance Policy :	Students who are absent for over 1/3 of the class will receive a grade of 'F' or U' for the course. (Exceptions can be made when the cause of absence is deemed unavoidable by the course instructor.)
Other Remarks :	

*4. Lecture Plan

Date	Topic
Dec 21	Syllabus; introduction; Hardy-Weinberg equilibrium
Dec 22	Linkage; markers; small populations; selection; assortative mating
Dec 23	Inbreeding and relatedness; estimating relatedness with markers
Dec 24	Phenotypic and genotypic values
Dec 28	Breeding values, dominance deviations, testcross effects; combining ability
Dec 29	Selecting parents to maximize mean performance
Dec 30	Linkage mapping of QTL
Jan 4	Significance tests; other methods for mapping QTL
Jan 5	Genetic variances
Jan 6	Covariance between relatives
Jan 7	Heritability; usefulness; linkage and epistasis; QTL results
Jan 11	Mating designs and estimating genetic variances
Jan 12	Genotype x environment interaction
Jan 13	Stability analysis; AMMI analysis; QTL x E interaction; envirotyping
Jan 14	Inbred and testcross selection
Jan 18	Choosing a tester; selection with major QTL
Jan 19	Best linear unbiased prediction
Jan 20	Properties of BLUE and BLUP; BLUP for hybrids and untested candidates
Jan 21	GBLUP; RR-BLUP; framework for genomewide selection
Jan 25	When to use genomewide selection; factors affecting accuracy
Jan 26	Number of effective factors; major QTL; QK model; G model
Jan 27	25 years of genomewide selection (recorded lecture)
Jan 28	Recurrent selection
Feb 1	Increasing the selection response; long-term selection
Feb 2	Heterosis and hybrid prediction
Feb 3	Selection for multiple traits
Feb 4	Reinventing quantitative genetics for plant breeding
Feb 8	*BreedingGames* class competition
Feb 9	Wrap-up lecture, open discussion
Feb 10	Final exam: Open book, open notes

5. Additional Notes for Students		
6. Assistance for Students with Disabilities	Class	✓ Visual Impairment: Make textbooks(digital textbook, braille textbook, enlarged textbook etc.), Allow note takers ✓ Physical Disability: Make textbooks (digital textbook), Allow note takers and assistants ✓ Hearing Impairment: Allow note takers and translators, Allow lecture recording ✓ Health Impairment: Excuse absence due to health problems, Allow note takers ✓ Learning Disability: Allow note takers ✓ Intellectual Disability / Autism Spectrum Disorder: Allow note takers and mentors
	Assignment & Evaluation	✓ Visual Impairment / Physical Disability / Hearing Impairment / Health Impairment / Learning Disability: Extend assignment deadlines, Offer alternate assignment submission and response method, Extend testing period, Offer alternate testing method, Offer different testing room ✓ Intellectual Disability / Autism Spectrum Disorder: Offer individualized assignments and alternative evaluations
	Others	Students who take this course can get appropriate level of support service including the support listed above depending on the students′ individual characteristics and needs through consultation with professors and the Support Center for Students with Disabilities. If you have any questions concerning support service for students with disabilities you can contact Professor ***(Contact Information) or Support Center for Students with Disabilities (02-880-8787).