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## Work Measurement Study

Robert S. Keyser

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# Fall 2022 Semester

## ISYE 3450 – Work Measurement Study

### Course Syllabus

**Instructor:** Dr. Robert S. Keyser, Associate Professor

**Department:** Industrial & Systems Engineering, College of Engineering, Kennesaw State University

**Preferred Email Address:** Prefer D2L e-mail, alternately [rkeyser@kennesaw.edu](mailto:rkeyser@kennesaw.edu)

**Office:** M 113A

**Phone:** 470-578-7339

**Office hours:** T 7:00am-9:30am and 10:45am-noon; W 10:45am-noon and by appt.

**Virtual office hours:** T 7:00am-9:30am and 10:45am-noon; W 10:45am-noon and by appt.

**Class meeting time and location:** T 9:30m-10:45am in M 135

#### Course Delivery

KSU may shift the method of course delivery at any time during the semester in compliance with University System of Georgia health and safety guidelines. In this case, alternate teaching modalities that may be adopted include hyflex, hybrid, synchronous online, or asynchronous online instruction.

#### COVID-19 illness

If you are feeling ill, please stay home and contact your health professional. In addition, please email your instructor to say you are missing class due to illness. Signs of COVID-19 illness include, but are not limited to, the following:

- Cough
- Fever of 100.4 or higher
- Runny nose or new sinus congestion
- Shortness of breath or difficulty breathing
- Chills
- Sore Throat
- New loss of taste and/or smell

COVID-19 vaccines are a critical tool in “Protecting the Nest.” If you have not already, you are strongly encouraged to get vaccinated immediately to advance the health and safety of our campus community. As an enrolled KSU student, you are eligible to receive the vaccine on campus. Please call (470) 578-6644 to schedule your vaccination appointment or you may walk into one of our student health clinics.

For more information regarding COVID-19 (including testing, vaccines, extended illness procedures and accommodations), see KSU’s official [Covid-19 website](#).

#### Face Coverings

Based on guidance from the University System of Georgia (USG), all vaccinated and unvaccinated individuals are encouraged to wear a face covering while inside campus facilities. Unvaccinated

individuals are also strongly encouraged to continue to socially distance while inside campus facilities, when possible.

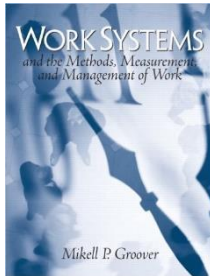
### **Electronic Communications Statement**

The best way to reach me between class periods is using the D2L email. This way I will know what class you are in. I will reply as quickly as possible to questions sent over e-mail. If you wish to meet with me in person, you can drop by my office during office hours. For online students, I am also willing to meet with you with an ad-hoc Collaborate Ultra live session during the week, if necessary.

### **Email Response Time**

I try to reply to all emails within 48 hours from the time you first transmit the email, unless I let you know in advance of travel prohibiting me from doing so (or if I have an emergency). At times I will send a mass email to the class or an announcement. This will be through D2L email and alternately with the campus mail. I do not know your Yahoo or Gmail accounts, so do not expect any mass emails to those accounts. **CHECK YOUR D2L EMAIL ACCOUNTS FREQUENTLY!**

### **Required Textbook**



**Work Systems**, Mikell P. Groover, 1st Edition, Prentice-Hall, 2006  
ISBN-13: 978-0131406507  
ISBN-10: 0131406507

### **Course Description**

This course consists of an examination of the principles and practices of work analysis and work measurement. Emphasis is on a variety of analytical tools and the development of the student's skill in the use of a video timing device.

### **Course Learning Outcomes**

Students will be able to:

1. Develop a systemic understanding of business and manufacturing processes.
2. Analyze and create improvements relevant to manufacturing processes.
3. Employ the basic principles of work design and work measurement time studies.

### **Course Prerequisites**

ISYE 2600 or MATH 2332 and Engineering Standing

### **KSU D2L Brightspace**

This course has a D2L course web site for use by registered students. Any class handouts, slides, grades, announcements, and links will be available there, so please get in the habit of checking it often. To log in, go to: <https://kennesaw.view.usg.edu/>. Your logon is the same as your KSU Net ID, and your net password. There are help links on the website too.

### Class Schedule/Attendance

This course will meet on Tuesdays on campus. As this is a Hybrid 50% course, significant asynchronous outside work will be required to replace what would typically be the other 75-minute class period. Attendance is strongly recommended for this course. Students who miss the live class for any reason are NOT exempt from the material covered during the class period(s) the student misses.

### Course Schedule

This course will meet on the dates indicated on the Course Schedule as posted on the course homepage. This is a hybrid course so we will meet on Mondays each week in a classroom and the remainder of the week you are responsible for viewing the PowerPoint lectures and weekly problem solutions.

### Assessment by Quizzes

You will have (1) Syllabus quiz and (11) chapter quizzes in this course. All quizzes are timed, 75-minute online quizzes consisting of T/F and M/C questions and problems. Quizzes for all students are open book/notes and online, **working alone** with no help from external resources such as people or technology. Students will receive their grade after completing the quiz. Online quizzes will open after the deadline has passed.

### Assessment by Exams

There will be a Midterm Exam and a Final Exam in this course. Go to the Quizzes tab to access exams. Both exams are timed, 75-minute online exams consisting of T/F and M/C questions and problems. Exams for all students are open book/notes and online, **working alone** with no help from external resources such as people or technology. Students will receive their grade after completing the exam. Online exams will open after the deadline has passed.

### Assessment by Group Projects

This course includes a Group Project where the student will use the concepts of work measurement to create an optimal work area layout that maximizes production output and achieves the quality and safety objectives of the organization and also minimizes employee fatigue. Students will self-enroll in groups of four students. Work element times will be measured using a timing instrument, such as a stopwatch, video, or smartphone. The Group Project Discussions grade will consist of four parts throughout the semester: (1) Group Discussion #1, (2) Group Discussion #2; (3) a completed Time Study Record and mp4 video file of the process that you time studied to be submitted in the Assignments tab; (4) a narrated PowerPoint presentation of your group project to be submitted in the Assignments tab; and (5) Group Discussion #3 - Metacognitive Reflections.

### Grading Policy

Your final grade in this course will be determined using the following weights for each component of this course: **Note: All grades count.**

Component	Weight
Attendance	10%
Syllabus Quiz	5%
(11) Chapter Quizzes	25%
Group Project	40%

<b>(1) Discussion #1: Topic (8%)</b>	
<b>(2) Discussion #2: Mid-semester Reflection (8%)</b>	
<b>(3) Time Study Record (8%)</b>	
<b>(4) Narrated PPT Presentation (8%)</b>	
<b>(5) Discussion #3: Metacognitive Reflection (8%)</b>	
<b>Midterm Exam</b>	10%
<b>Final Exam</b>	10%
<b>Total</b>	100%

### Grading Scale

90 to 100 = A  
 80 to < 90 = B  
 70 to < 80 = C  
 60 to < 70 = D  
 59.9 and below = F

**Note:** There are (20) graded assignments in this course plus (1) bonus assignment. Your course letter grade will be determined by your course average using the assignment weights and grading scale shown above. For example, if your course average is 89.9, your course grade will be a B, since you need a minimum course average of 90 for an A in the course.

### Missed/Late Work

No late assignments will be accepted. All missed/late assignments will receive the grade of zero. **Strictly enforced.**

### Attendance Policy

1. All students are expected to attend all class sessions beginning with the first class session and continuing all the way through Final Exam Week. You will need to sign the Attendance Sheet for each class session. Do not sign for someone else.
2. Students who miss class for any reason are not exempt from the material covered during the class the student misses.
3. The instructor is not responsible for assisting students catch up on class material when the student is absent from class.
4. It should be noted that students who attend class on a regular basis normally perform better on the Assignments and on Exams.
5. However, simply being present in class does not guarantee that the student will receive a high grade or a passing grade in this course.

Component	Weight
<b>0-2 Absences</b>	10%
<b>3-4 Absences</b>	7%
<b>5-6 Absences</b>	5%
<b>7-8 Absences</b>	2%
<b>9 or more Absences</b>	0%

### Calculators/Software

You will need access to a calculator and/or Excel capable of performing basic engineering and/or financial math functions (available in the computer labs). All exams you will be allowed use of Excel on the classroom computers as well as pocket calculators.

### Technology Skills Needed

All students are expected to be familiar with:

1. Connecting to the internet.
2. Logging in to the course website (i.e. D2L Brightspace).
3. Using internet browsers (e.g., Internet Explorer, Firefox, Chrome, etc.).
4. Downloading and opening PDF, Word, and Excel documents.
5. Elementary use of Excel including Cell Referencing and using Math Functions, no VBA required.

### Withdrawal

Students who find that they cannot continue in college for the entire semester after being enrolled, because of illness or any other reason, need to complete an online form. To completely or partially withdraw from classes at KSU, a student must withdraw online at [www.kennesaw.edu](http://www.kennesaw.edu), under Owl Express, Student Services.

The date the withdrawal is submitted online will be considered the official KSU withdrawal date which will be used in the calculation of any tuition refund or refund to Federal student aid and/or HOPE scholarship programs. It is advisable to print the final page of the withdrawal for your records. Withdrawals submitted online **prior** to midnight on the last day to withdraw without academic penalty will receive a “W” grade. Withdrawals **after** midnight will receive a “WF”. Failure to complete the online withdrawal process will produce no withdrawal from classes. Call the Registrar’s Office at 770-423-6200 during business hours if assistance is needed.

Students may, by means of the same online withdrawal and with the approval of the university Dean, withdraw from individual courses while retaining other courses on their schedules. This option may be exercised up until the W date on the Academic Calendar (on Registrar’s website). Failure to withdraw by the W date will mean that the student has elected to receive the final grade(s) earned in the course(s). The only exception to those withdrawal regulations will be for those instances that involve unusual and fully documented circumstances. In these rare cases, the policies of the university regarding hardship withdrawals will be strictly followed.

If any remaining coursework cannot be completed by the last class day, the instructor of this course will only consider assigning an incomplete grade to a student with an unusual and fully documented circumstance (must be verified by department chair or college dean), who is passing the course within two weeks of the last class day. If the final exam is among the assignments, the

student's grade will remain an "F" until it is taken, after which a grade change form will be submitted to the registrar if necessary, once the other agreed upon conditions are met.

### **KSU Diversity Vision Statement**

It is our vision to create a strong multicultural and diverse educational environment at KSU in order to increase student satisfaction and to promote an understanding and awareness of people from various backgrounds upon graduation. In this way, KSU students will be educated for, and can effectively compete in the global society.

### **Course Enrollment Status Statement**

Students are solely responsible for managing their enrollment status in a class; nonattendance does not constitute a withdrawal.

### **Student Support Resources – Strategies for Success**

- Library, Tech Support, Tutoring, Writing Center, Advising, Bookstore, Resource Guide, Online Courses, other support resources: <https://ols.kennesaw.edu>
- Accessibility Statements or VPAT for Technologies: <https://softchalkcloud.com/lesson/serve/jV10GKPfztZwQn/html>
- Academic and Student Services: <http://www.kennesaw.edu/currentstudents.php>

### **KSU Campus Awareness, Resource & Empowerment (CARE) Services**

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact CARE Services ([care.kennesaw.edu](http://care.kennesaw.edu)). The Campus Awareness, Resource & Empowerment (CARE) Services offers support to students who have experienced homelessness, food insecurity and/or the foster care system. Contact them at 470-578-5260 or [careservices@kennesaw.edu](mailto:careservices@kennesaw.edu) for help.

### **Other Technical Resources**

- For D2L Technical Support: <http://uits.kennesaw.edu/>.
- D2L Privacy Statement: <http://www.brightspace.com/legal/privacy/>
- Blackboard Collaborate Support: [https://apps.kennesaw.edu/files/pr\\_app\\_uni\\_cd/doc/doc/Blackboard%20Collaborate%20for%20Students.pdf](https://apps.kennesaw.edu/files/pr_app_uni_cd/doc/doc/Blackboard%20Collaborate%20for%20Students.pdf)
- The Privacy Policies for External Tools: <http://www.blackboard.com/footer/privacy-center.aspx>
- Help Desk: [studenthelpdesk@kennesaw.edu](mailto:studenthelpdesk@kennesaw.edu), phone 470-578-6999
- Walk-in Help: Marietta campus - bottom floor H-building just outside the double doors on the East side.
- Personal Laptop/Smart Phone Help: <http://uits.kennesaw.edu/> or walk-in.
- Please remember to use the rules of Netiquette in any online communication environment. <http://www.education.com/reference/article/netiquette-rules-behavior-internet>

### **SPCEET CLUE Center**

The Southern Polytechnic College of Engineering and Engineering Technology CLUE (Collaborative Learning for Undergraduate Engineering) Center provides free peer-based academic



support for a selection of engineering and engineering technology courses. Tutoring is offered Monday through Saturday, both face-to-face and online. Face-to-face tutoring is in room 306 of the Engineering Technology Center (Building Q) on a drop-in basis and online is by appointment. Tutoring for a given subject is available according to a weekly schedule, based on the tutors' availability. During those hours, students are welcome to receive tutoring from a peer who has already earned either an A or a B in the course. For additional information, visit the CLUE Center website.

### **Academic Honesty/Integrity/Ethics Statement**

Every KSU student is responsible for upholding the provisions of the [Student Code of Conduct](#), as published in the Undergraduate and Graduate Catalogs. Section 5c of the Student Code of Conduct addresses the university's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to university materials, misrepresentation/falsification of university records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Department of Student Conduct and Academic Integrity (SCAI), which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement.

The high quality of education at Kennesaw State University is reflected in the credits and degrees its students earn. ***All assignments that take place in and out of the classroom must be your own work and original for this course.*** The protection of these high standards is crucial since the validity and equity of the University's grades and degrees depend upon it. Any student found to have violated any KSU academic honesty regulation after a hearing before a university hearing panel or before the Vice President for Student Success and Enrollment Services (or his/her designee) shall be suspended for at least one semester, unless the student persuades the deciding body that the circumstances of his or her behavior substantially mitigate the gravity of the violation. These regulations are designed to assist students in (1) developing appropriate attitudes about, and (2) understanding and following the university's standards relating to academic honesty. The regulations protect students by helping them avoid committing infractions that may compromise the completion of their KSU degrees or damage their reputations. ***Any student caught cheating will fail the given assignment and be reported to the Office of Academic Affairs. No excuses. No exceptions.***

***Student Conduct Pledge/Statement:*** *As a member of the Kennesaw State University community of scholars, I understand that my actions are not only a reflection on myself, but also a reflection on the University and the larger body of scholars of which it is a part. Acting unethically, no matter how minor the offense, will be detrimental to my academic progress and self-image. It will also adversely affect all students, faculty, staff, the reputation of this University, and the value of the degrees it awards. Whether on campus or online, I understand that it is not only my personal responsibility, but also a duty to the entire KSU community that I act in a manner consistent with the highest level of academic integrity. Therefore, I promise that as a member of the Kennesaw State University community, I will not participate in any form of academic misconduct.*

### **Types of Academic Misconduct:**



1) **Cheating:** Receiving, attempting to receive, knowingly giving or attempting to give unauthorized assistance in the preparation of any work required to be submitted for credit (including examinations, laboratory reports, essays, themes, term papers, etc.) is considered cheating, as is engaging in any behavior that a professor prohibits as academic misconduct in the syllabus or class discussion. Unless specifically authorized, using and/or having access to electronic devices during an examination, quiz, test or other assessment is automatically considered cheating, regardless of the student's reason for using/accessing the device;

2) **Plagiarism:** Including direct quotations from other sources into work required to be submitted for credit without indicating them as such by quotation marks, block quotes or other appropriate formatting. Incorporating the work of someone (e.g. ideas, theories, data, figures, graphs, programs, electronic based information, illustrations, etc.) into a paper or project without due acknowledgement;

3) **Self-Plagiarism:** Submitting any work for credit which was not authored specifically and originally for the assignment in question without the prior permission of the professor receiving that assignment. Most commonly, this means submitting the same, or substantially the same, paper or other assignment for credit in more than one class;

4) **Misrepresentation and/or Falsification:** Knowingly providing false information in completing University forms or applications (including admissions forms, scholarship applications, time sheets, false or counterfeit transcripts, etc.) or in any work submitted for credit. This includes providing fabricated/altered documents to substantiate an excused absence (such as to meet attendance requirements or have the chance to make-up a missed exam). Signing in for another student or having another individual sign in on a student's behalf on an attendance sheet also constitutes a violation of this code section.

5) **Unauthorized Access to University Materials:** Taking, attempting to take, stealing or in any unauthorized manner otherwise procuring, gaining access to, altering or destroying any material pertaining to the conduct of a class (including tests, examinations, grade change forms, grade rolls, roll books, laboratory equipment, University grade records in written or computerized form, etc.).

6) **Malicious/Intentional Misuse of Computer Facilities/Services:** Maliciously or intentionally misusing university-controlled computer facilities and services. This includes violations of state and federal laws (e.g. copyright violations, unauthorized access to systems, alteration/damage/destruction, or attempted alteration/damage/destruction, use for profit, etc.) or a department's rules for computer usage (e.g. account violations, damage, or destruction of the system and/or its performance, unauthorized copying of electronic information, use of threatening or obscene language, etc.).

7) **Malicious Removal, Retention or Destruction of University Resource Materials:** Misplacing, taking, destroying any item or part of an item belonging to or in the protection of the University (or the attempt thereof) with the intention of bringing about an undue disadvantage in the academic pursuits of other Kennesaw State University students.

These examples of academic dishonesty shall not be construed to be comprehensive, and infractions will be dealt with on an individual basis according to university policies and procedures. It is the obligation of each student to assist in the enforcement of academic standards.

*See: The KSU Student Code of Conduct at KSU Codes of Conduct-2015.pdf*

**Enforcement:** This policy is strictly enforced. Please note, *I reserve the right to select any paper and/or assignment that are turned in for a grade for plagiarism review. Plagiarism review consists of running your paper/assignment through various search engines and databases at my disposal in order to check for “borrowed” or “bought” information. Students will be required to use TurnItIn.Com to have their papers reviewed for plagiarism.* If you are found in violation of academic dishonesty, then you will be subject to the enforcement policies and procedures, as outlined by the University and the Department.

### **Disruption of the Classroom**

Faculty members are responsible for maintaining discipline in the classroom setting to the extent that all students in that class have an opportunity to participate in the learning process. Free exchange of ideas through appropriate dialogue is a necessary and important part of the learning process. Outside the classroom, other areas of the campus provide support services, which are also important to the total learning process. Sometimes the faculty or staff member may be confronted with a situation where the conduct of a particular student or students is so inappropriate that it impedes the natural and necessary learning process. All incidents of disciplinary violations of the KSU Student Code of Conduct outside of residence hall property shall be reported to the Department of Student Conduct and Academic Integrity (SCAI).

- If the situation is not imminently dangerous, the faculty or staff member may control the immediate situation by requiring the student(s) to meet specific criteria (not speaking during the remainder of the class period, leaving the classroom or office area immediately, etc.), or the faculty member may choose to dismiss the class for the remainder of the period to avoid a confrontation.
- In situations where a student's conduct is both disruptive and poses imminent danger to the health and safety of himself/herself or others, immediately contact the KSU Police at (470) 578-6666. The responding officer at the time of notification shall remove the student from the area immediately.
- Immediately report the incident to the SCAI Dept. and/or the Office of the Dean for Students and for possible handling under the "Interim Suspension" policy, described in Section III below.
- The SCAI officer will investigate the incident and will advise as to the appropriate course of action in each situation.
- See <http://scai.kennesaw.edu/students/general-info/conduct-violation.php> for more information.

### **Student Records/FERPA**

Kennesaw State University adheres to the Family Educational Rights & Privacy Act of 1974 – FERPA. See the following link for more information:

<https://ferpa.kennesaw.edu/>

### **Student Rights and Responsibilities**

Students of Kennesaw State University are entitled to an environment that is conducive to learning and individual growth. To this end, students enrolling at Kennesaw State University assume a responsibility to abide by the policies and regulations expressed in this section. By doing so, students may fulfill their responsibilities and enjoy the exercise of their own rights while also respecting the rights of others. All rights and responsibilities may be found in the University Catalog at [catalog.kennesaw.edu](http://catalog.kennesaw.edu).

### **Sexual Misconduct Policy**

Kennesaw State University adheres to KSU's policy prohibiting sexual misconduct both in and out of the classroom. Questions about this policy should be directed to the KSU Equal Employment Opportunity (EEO) and Title IX officer by telephone at (470) 578-2614. You may also visit the University's EEO website <https://scai.kennesaw.edu/procedures/sexual-misconduct.php> for more information.

### **Americans with Disabilities Act (ADA) – Support Services**

In compliance with applicable disability law, qualified students with a disability may be entitled to *reasonable accommodation*. Any student with a documented disability (hidden or visible) needing academic adjustments, including classroom or test accommodations is requested to notify the instructor within the first two weeks of the course. Verification from KSU Disabled Student Support Services is required. All discussions and documentation will remain confidential.

Disabled Student Support Services:

Joe Mack Wilson Student Center, Suite 160, 470.578.6644

Please visit the <https://sds.kennesaw.edu/> for more information.

### **Curriculum, Instruction, and Assessment Policies**

KSU's Curriculum, Instruction, and Assessment policies can be found at this website: <https://cia.kennesaw.edu/instructional-resources/syllabus-policy.php>

### **Copyright Law**

Kennesaw State University adheres to USG's policy to respect the right of copyright. Holders and comply with copyright laws as set forth in the United States Copyright act. For more information, see the following link to USG's policy: <http://www.usg.edu/copyright/>

### **Web Accessibility**

Kennesaw State University follows the guidelines of the Universal Design for Learning standard of web accessibility. Faculty use Word, PDF, and HTML formats when communicating electronic information to students whenever possible and appropriate in light of the goals of the course. Faculty are trained to use Web Accessibility Evaluation tools, e.g., WAVE ([www.wave.webaim.org](http://www.wave.webaim.org)), and make adjustments as possible and appropriate in light of the goals of the course. For free resources available to students on web accessibility, please visit the Web Accessibility Resources page at the Distance Learning Center: <http://www.kennesaw.edu/dlc/facultyresources/index.php#>

### **Electronic Recording and Social Media**

Electronic recording performed without the consent of the people being recorded chills the free exchange of ideas. Academic freedom, free inquiry, and freedom of expression should not be limited by the fear that one's brainstorming, polemic discourse, speculative inquiry, or any other kind of expressed curiosity made within the space of a university classroom will be made public without one's consent. This fear is unacceptable regardless of whether one is in an online, hybrid, or face-to-face classroom setting. Accordingly, no person shall make public any electronically recorded class discussion without the written permission of the instructor. This policy is not intended to discourage electronic recording in the classroom or the use of social media when such actions are performed with the written consent of the instructor, and others as appropriate. Note: Faculty accommodate all reasonable requests to electronically record a class discussion; these requests must be documented by the DisAbled Student Support Services available at: <https://sds/kennesaw.edu/>