

**Industrial Engineering 441:
Work and Organization Design**
University of Illinois at Urbana-Champaign
Department of Industrial and Enterprise Systems Engineering
Fall 2024

Course Description

In Work and Organization Design, we will learn about models and theories of work and organization design. By the end of the class you will be able to distinguish between good and bad jobs, including important characteristics of organizations, based on empiric evidence. This class will also provide tools and skills to analyze and redesign jobs to make bad jobs into good ones. We will discuss various implementation strategies to intelligently apply redesigns, which improves their success.

Credits: 3/4

Schedule:

Lectures: Mondays and Wednesdays, 2:00 – 3:20 pm (central time),
Engineering Hall 106B3

Instructor:

Dr. Abigail R. Wooldridge
Office: 209A Transportation Building
Lab: 2311/2313 DCL
Email: arwool@illinois.edu
Phone: 217-300-8086
Office Hours: Wednesday 1:00-2:00 pm (in DCL 2311), or by appointment

Course Outcomes:

1. To understand models and theories of job and organization design: what makes for a good job? What makes for a bad job?
2. To be able to apply models and theories of job and organization design to the analysis and redesign of jobs: how to redesign jobs? What process to use to implement job redesign?

Textbook:

The course includes lectures by the instructor and guest speakers, in-class discussion and exercises.

One book is recommended (not required), in particular for graduate students:

- Parker, S., & Wall, T. (1998). *Job and Work Design*. Thousand Oaks, CA: Sage Publications.

Additional readings are available on the website of the course.

Course website: <https://canvas.illinois.edu/>

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the Canvas Learning management system course website. You are responsible for regularly checking the course site as well as your Illinois email and Canvas messages to learn of any updates. If you do not have access to the Canvas course website by the first class meeting, please notify Dr. Wooldridge right away!

Note: Class material is copyright to the University of Illinois at Urbana-Champaign and should not be distributed or disseminated.

Grading Scale: Straight (i.e., no +/-)

90% and up: A 80% - 89%: B 70% - 79%: C 60% - 69%: D below 59%: F

Grade Determination

| Item | Points for 3 credit hours | Points for 4 credit hours |
|--|---|--------------------------------------|
| Homework 6 assignments, 5 points each | Score out of maximum 30 points | Score out of maximum 30 points |
| Exam 1 | Score out of maximum 30 points | Score out of maximum 30 points |
| Exam 2 | Score out of maximum 30 points | Score out of maximum 30 points |
| Student Bio Survey | 1 points out of maximum 1 points | 1 points out of maximum 3 points |
| Office hours visit | 1 points out of maximum 1 points | 1 points out of maximum 2 points |
| Initial work design activity | 1.5 points out of maximum 1.5 points | 1.5 points out of maximum 1.5 points |
| Repeated work design activity | 1.5 points out of maximum 1.5 points | 1.5 points out of maximum 1.5 points |
| Class participation | Score out of maximum 5 points | Score out of maximum 5 points |
| Research Paper | Not required! | Score out of maximum 30 points |
| <i>Extra Credit (optional)</i> | <i>Extra credit points will be available over the course of the semester as described below; additional opportunities may be announced during class</i> | |
| Total | Sum of the above, out of 100 points | Sum of the above, out of 130 points |

- Homework: 6 assignments
- Exam 1
- Exam 2
- Student bio – based on turning in your student bio
- Office hours visit – during the first three weeks of class (slots of 5 minutes will be available during regularly scheduled office hours plus extra time to accommodate students as needed)
- Initial work design activity – this if for completion, not accuracy.
- Repeated work design activity – repeats the initial work design activity plus a reflection.
- Class participation - Participation is what you would expect: Attend class and contribute!
- **Only for students enrolled in 4 credit hours:** Research paper – 10 to 20-page written report (double spaced) on a topic of your choosing, provided it is in some way related to work and organization design. This is similar to a literature review that you might do for a thesis. Given your chosen topic, identify **at least ten** research papers from a variety of **peer-reviewed journals across at least four decades** [journals such as *Human Factors*, *ACM Transactions on Computer-Human Interaction*, or *Journal of Experimental Psychology: Applied*]; at least one paper must be from the 1980s, 1990s, 2000s, and 2010s), more of your papers should be in the last 2 decades. Provide a rich narrative (illustrating your careful thought and analysis) that explains the evolution of this research topic over the decades. You should conclude with an interesting area for future research that has been neglected, possibly proposing research question(s) to investigate. Of course, provide full citations (APA format) in your reference section. For additional help with writing a literature review, see https://guides.library.illinois.edu/lit_review or <https://writersworkshop.illinois.edu/resources-2/writer-resources/academic-writing/literature-reviews/>. Format:
 - 1 inch margins
 - 12 point times new roman font
 - 10 – 20 pages in length, *excluding references!*
 - APA format in-text citations and references

Extra Credit:

You can earn 0.5 extra credit point (to be added on to your final grade, i.e., worth 0.5% extra) by coming to my office hours any week other than the first three weeks to *have a conversation* (can be about this course, it could be about the broader HFE field, career advice, life advice, etc.). This can be repeated each week, except

for fall break and after the last day of class, for a total of 6 extra credit points over the course of the semester. Other opportunities for extra credit may be announced throughout the semester.

Research Paper:

Expectations are outlined above. More details, including a rubric, will be provided.

Email policy

Please check the syllabus and Compass2g before asking questions. When sending an email, observe the following rules or professionalism:

- Title the email “**IE 441 (subject of your email)**” in the subject line. This prevents your email from going to the junk folder.
- Maintain [professional etiquette](#), including a respectful greeting, and clear, polite body of the email.
- Frame your question clearly and professionally. Include all relevant information about what you need up front.
- Email in advance. Allow 1 business for a response.

Expectations for course meetings

- Participate in class discussions, contribute individual experiences when relevant to the topic so that others can benefit and learn.
- Ask questions...there is no bad question if you learned something from the response.
- Maturity and respect for others is mandatory (see statement on diversity).
- Cell Phones should be turned off at the beginning of class unless you are emergency personnel on-call. Activation or use of a cell phone will be penalized.
- Use other electronic devices (tablets, laptops, etc.) for course-related purposes only. Do not bring any electronic devices to exams.
- Take individual responsibility for completing assignments on time.
- Check e-mail and Compass frequently (just not in class)
- All readings should be completed prior to class (except for first day, but those need to be done before the second class).
- Lecture notes will be available in the “Lectures” tab prior to class. I recommend you bring them (printed or otherwise) to help you take notes.
- Class begins and ends on time. Arriving late or leaving early will disrupt Dr. Wooldridge and the class, putting your fellow classmates at a disadvantage.

Absences and make up/late assignments

- Attendance and participation are expected as part of the course. But, if you are ill you should absolutely stay home and rest (especially right now) – all verified absences will be excused.
- If you miss class that includes a lecture, you will write **1-2 pages double spaced (i.e., 1 page minimum, 2 pages maximum)** about the topic, including what you think the main takeaway from the lecture is, any muddy points remaining that you have questions about, and responses to any in-class activities.
- If you miss a class that is activity based, you will complete the activity individually (ask Prof. Wooldridge if you need any materials) and write **1-2 pages double spaced (i.e., 1 page minimum, 2 pages maximum)** reporting on the activity (tables and figures encouraged and count!).
- Make-up for examinations must have absence letter from the Office of the Dean of Students (<https://odos.illinois.edu/community-of-care/resources/students/absence-letters/>).

Religious Observances

Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and

practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. You should examine this syllabus at the beginning of the semester for potential conflicts between course deadlines and any of your religious observances. If a conflict exists, you should notify your instructor of the conflict and follow the procedure at <https://odos.illinois.edu/community-of-care/resources/students/religious-observances/> to request appropriate accommodations. This should be done in the first two weeks of classes.

Academic Integrity

The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/>.

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <https://studentcode.illinois.edu/article1/part4/1-401/>. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

I will enforce the university's standards of Academic Integrity. All alleged infractions will be documented in the campus-wide FAIR database and investigated, and all committed infractions will result in sanctions.

Accommodations for Individuals with Disabilities

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible **during the first week of the course**. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603, e-mail disability@illinois.edu or go to the <http://www.disability.illinois.edu/>. If you are concerned you have a disability-related condition that is impacting your academic progress, there are academic screening appointments available on campus that can help diagnosis a previously undiagnosed disability by visiting the DRES website and selecting "Sign-Up for an Academic Screening" at the bottom of the page.

Additional University Resources

If you are interested in obtaining information to improve writing, study skills, time management or organization, the following campus resources are available to all students:

- Library Savvy Researcher workshops and guides
 - <https://calendars.illinois.edu/list/4068>
 - https://guides.library.illinois.edu/sb.php?subject_id=70338
- Graduate College Grant Writing Workshops and Resources
 - <https://grad.illinois.edu/fellowship/external-workshops>
 - <https://grad.illinois.edu/fellowship/external-resources>
- Writer's Workshop
 - Undergrad Library
 - 217-333-8796
 - <https://writersworkshop.illinois.edu>
 - Offers consultations, workshops, resources, etc. They will review outlines, drafts, and papers. Explore their website!
- <http://www.cws.illinois.edu/workshop>
- <https://www.disability.illinois.edu/strategies>
- <http://www.counselingcenter.illinois.edu/self-help-brochures/>

Also, most college offices and academic deans provide academic skills support and assistance for academically related and personal problems. Links to the appropriate college contact can be found by going to this website and selecting your college or school: <http://illinois.edu/colleges/colleges.html>

If you are experiencing symptoms of anxiety or depression or are feeling overwhelmed, stressed, or in crisis, you can seek help through the following campus resources:

Counseling Center
206 Student Services Building
7:50 a.m.-5:00 p.m., Monday through Friday
Phone: 217-333-3704

Note: there is a counselor affiliated with the campus Counseling Center available during the week for appointments in Engineering Hall for engineering students – call 217-333-2280 to schedule a half-hour appointment.

McKinley Mental Health
313 McKinley Health Center
8:00 a.m.-5:00 p.m., Monday through Friday
Phone: 217-333-2705

McKinley Health Education offers individual consultations for students interested in learning relaxation and other stress/time management skills, call 333-2714.

General Emergency Response Recommendations

Emergency response recommendations can be found at the following website: <http://police.illinois.edu/emergency-preparedness/>. I encourage you to review this website and the campus building floor plans website within the first 10 days of class. <http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>. Check out campus safety video and be sure to join Illini Alerts.

Family Educational Rights and Privacy Act (FERPA)

Any student who has suppressed their directory information pursuant to *Family Educational Rights and Privacy Act* (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.

Sexual Misconduct Policy and Reporting

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options. A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: <https://wecare.illinois.edu/resources/students/#confidential>. Other information about resources and reporting is available here: wecare.illinois.edu.

Statement on Diversity and Inclusion

The Grainger College of Engineering is committed to the creation of an anti-racist, inclusive community that welcomes diversity along a number of dimensions, including, but not limited to, race, ethnicity and national origins, gender and gender identity, sexuality, disability status, class, age, or religious beliefs. The College recognizes that we are learning together in the midst of the Black Lives Matter movement, that Black, Hispanic, and Indigenous voices and contributions have largely either been excluded from, or not recognized in, science and engineering, and that both overt racism and micro-aggressions threaten the well-being of our students and our university community.

The effectiveness of this course is dependent upon each of us to create a safe and encouraging learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and

respect for all of us. Everyone is expected to help establish and maintain an environment where students, staff, and faculty can contribute without fear of personal ridicule, or intolerant or offensive language. If you witness or experience racism, discrimination, micro-aggressions, or other offensive behavior, you are encouraged to bring this to the attention of the course director if you feel comfortable. You can also report these behaviors to the Bias Assessment and Response Team (BART) (<https://bart.illinois.edu/>). Based on your report, BART members will follow up and reach out to students to make sure they have the support they need to be healthy and safe. If the reported behavior also violates university policy, staff in the Office for Student Conflict Resolution may respond as well and will take appropriate action.

The diversity of the participants in this course is a valuable source of ideas, problem solving strategies, and engineering creativity. If you feel that your contribution is not being valued for any reason, please speak with me privately. If you wish to communicate anonymously, you may do so in writing. We are all members of an academic community where it is our shared responsibility to cultivate a climate where all students/individuals are valued and where both they and their ideas are treated with respect. Developing and maintaining that climate is part of the expectations for this course. If you have made it this far paying attention, thank you. Email me before the second class, using the correct subject line format with your name in the subject line to receive 1 extra credit point.

General Emergency Response Recommendations

Emergencies can happen anywhere and at any time, so it's important that we take a minute to prepare for a situation in which our safety could depend on our ability to react quickly. Take a moment to learn the different ways to leave this building. If there's ever a fire alarm or something like that, you'll know how to get out and you'll be able to help others get out. Next, figure out the best place to go in case of severe weather – we'll need to go to a low-level in the middle of the building, away from windows. And finally, if there's ever someone trying to hurt us, our best option is to run out of the building. If we cannot do that safely, we'll want to hide somewhere we can't be seen, and we'll have to lock or barricade the door if possible and be as quiet as we can. We will not leave that safe area until we get an Illini-Alert confirming that it's safe to do so. If we can't run or hide, we'll fight back with whatever we can get our hands on. If you want to better prepare yourself for any of these situations, visit police.illinois.edu/safe. Remember you can sign up for emergency text messages at emergency.illinois.edu.

Run > Hide > Fight

Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with almost any kind of emergency – like severe weather or if someone is trying to hurt you – we have three options: Run, hide or fight.



Run

Leaving the area quickly is the best option if it is safe to do so.

- ▶ Take time now to learn the different ways to leave your building.
- ▶ Leave personal items behind.
- ▶ Assist those who need help, but consider whether doing so puts yourself at risk.
- ▶ Alert authorities of the emergency when it is safe to do so.



Hide

When you can't or don't want to run, take shelter indoors.

- ▶ Take time now to learn different ways to seek shelter in your building.
- ▶ If severe weather is imminent, go to the nearest indoor storm refuge area.
- ▶ If someone is trying to hurt you and you can't evacuate, get to a place where you can't be seen, lock or barricade your area if possible, silence your phone, don't make any noise and don't come out until you receive an Illini-Alert indicating it is safe to do so.



Fight

As a last resort, you may need to fight to increase your chances of survival.

- ▶ Think about what kind of common items are in your area which you can use to defend yourself.
- ▶ Team up with others to fight if the situation allows.
- ▶ Mentally prepare yourself – you may be in a fight for your life.

Please be aware of people with disabilities who may need additional assistance in emergency situations.

Other resources

- ▶ police.illinois.edu/safe for more information on how to prepare for emergencies, including how to run, hide or fight and building floor plans that can show you safe areas.
- ▶ emergency.illinois.edu to sign up for Illini-Alert text messages.
- ▶ **Follow the University of Illinois Police Department** on Twitter and Facebook to get regular updates about campus safety.

Schedule

| Week | Day | Date | Topic | Reading/Preparation |
|------|-----|---------|---|--|
| 1 | Mon | 8/26/24 | Job description and specification | |
| | Wed | 8/28/24 | Model of work system and interviewing | Read Carayon (2009) |
| | Fri | 8/30/24 | Week 1 due date: student bio (by midnight on Canvas) Work design activity from first class (by midnight on Canvas) | |
| 2 | Mon | 9/2/24 | Labor day! No class! | |
| | Wed | 9/4/24 | Scientific management | Watch Taylorism on ABC: https://www.youtube.com/watch?v=CCsOqWbK46o Watch video on interviewing (on compass) |
| | Fri | 9/6/24 | Week 2 due date: homework on work system analysis (by midnight on Canvas) | |
| 3 | Mon | 9/9/24 | <i>Virtual Class - watch prerecorded lecture</i> Work motivation | Read Steers et al. (2004) |
| | Wed | 9/11/24 | <i>No class meeting</i> Small group work: affinity diagram of work motivation - write up and share as discussion board Note: interviews + analysis must be completed before class (for homework 2) ; write up not due until Friday | |
| | Fri | 9/13/24 | Week 3 due date: homework report on interviews about work motivation (by midnight on Canvas); discussion post on affinity diagram (review other groups' too! On Canvas) Office hours visit must be completed | |
| 4 | Mon | 9/16/24 | Job characteristic theory | Read Hackman et al. (1975) |
| | Wed | 9/18/24 | <i>No class meeting</i> Small group work: surveys | |
| | Fri | 9/20/24 | Week 4 due date: discussion post on surveys (review other groups' too! On Canvas) | |
| 5 | Mon | 9/23/24 | Job rotation, enlargement and enrichment | Read Herzberg (1974) |
| | Wed | 9/25/24 | Small group work: job redesign activity | |
| | Fri | 9/27/24 | Week 5 due date: homework comparing job enrichment theories (by midnight on Canvas) | |
| 6 | Mon | 9/30/24 | Job stress | Read Karasek & Theorell (1990) |

NOTE: Schedule subject to change with fair notice, check "Announcements" on Canvas for updates.

Last updated: August 22, 2024

| Week | Day | Date | Topic | Reading/Preparation |
|------|-----|----------|--|---|
| | Wed | 10/2/24 | Small group work: discussion on job stressors | Watch NIOSH video on job stress: https://www.youtube.com/watch?v=q0YyxwALGaw and https://www.youtube.com/watch?v=vvDc3vuEfWk (both parts) |
| | Fri | 10/4/24 | Week 6 due date: nothing due | |
| 7 | Mon | 10/7/24 | Review for exam 1 | |
| | Wed | 10/9/24 | Exam 1 | |
| | Fri | 10/11/24 | Week 7 due date: homework on job stressors (by midnight on Canvas) I recommend you complete this before the exam! 4 Credit hour: paper topic due (by midnight on Canvas) | |
| 8 | Mon | 10/14/24 | Performance obstacles and Balance theory | Read Carayon et al. (2005) |
| | Wed | 10/16/24 | Small group work: obstacles and facilitators in student job | |
| | Fri | 10/18/24 | Week 8 due date: nothing due | |
| 9 | Mon | 10/21/24 | Teams and teamwork | Read Salas et al. (2008) |
| | Wed | 10/23/24 | Small group work: analysis of past team projects | |
| | Fri | 10/25/24 | Week 9 due date: nothing due | |
| 10 | Mon | 10/28/24 | SEIPS Model | Read Carayon et al. (2006; 2014) |
| | Wed | 10/30/24 | SEIPS-based process analysis | Read Carayon et al (2004) and Wooldridge et al. (2017) |
| | Fri | 11/1/24 | Week 10 due date: homework on teams (by midnight on Canvas) | |
| 11 | Mon | 11/4/24 | Job evaluation and redesign | Read Carayon (2009) |
| | Wed | 11/6/24 | Job redesign in the organizational context | Reading posted online (from recommended text) |
| | Fri | 11/8/24 | Week 11 due date: nothing due | |
| 12 | Mon | 11/11/24 | Participatory ergonomics | Read Haims & Carayon (1998) |
| | Wed | 11/13/24 | Small group work: case study | |
| | Fri | 11/15/24 | Week 12 due date: nothing due | |

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Last updated: August 22, 2024

| Week | Day | Date | Topic | Reading/Preparation |
|------|-----|----------|--|---------------------------------|
| 13 | Mon | 11/18/24 | Management of change and system redesign | Read Eason (1995) |
| | Wed | 11/20/24 | Changing workforce | |
| | Fri | 11/22/24 | Week 13 due date: 4 credit hour optional draft for review due (by midnight on Canvas) | |
| 14 | Mon | 11/25/24 | Fall break! No class! | |
| | Wed | 11/27/24 | | |
| | Fri | 11/29/24 | | |
| 15 | Mon | 12/2/24 | Cross-cultural job design | Read Carayon & Jarvenpaa (2001) |
| | Wed | 12/4/24 | Small group work: analysis of countries represented in class | |
| | Fri | 12/6/24 | Week 15 due date: homework on workforce Canvas | |
| 16 | Mon | 12/9/24 | Prep for exam 2 | |
| | Wed | 12/11/24 | Exam 2 Last day of class! | |
| | Thu | 12/12/24 | Reading day! | |
| | Fri | 12/13/24 | Final Exam Period (12/13-12/19) - TBD in October Repeated work design activity due by end of final exam period on Canvas 4 credit hours: research paper | |

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References for Required Readings

- Carayon, P. (2009). The Balance Theory and the work system model... Twenty years later. *International Journal of Human-Computer Interaction*, 25(5), 313-327.
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- Carayon, P., Hundt, A. S., Karsh, B.-T., Gurses, A. P., Alvarado, C. J., Smith, M., & Brennan, P. F. (2006). Work system design for patient safety: The SEIPS model. *Qual Saf Health Care*, 15(Supplement I), i50-i58.
- Carayon, P., & Järvenpää, E. (2001). Cross-cultural factors in macroergonomics. In W. Karkowski (Ed.), *The International Encyclopedia of Ergonomics and Human Factors* (pp. 1205-1209). London: Taylor & Francis.
- Carayon, P., Schultz, K., & Hundt, A. S. (2004). Righting wrong site surgery. *Joint Commission Journal on Quality and Safety*, 30(7), 405-410.
- Carayon, P., Wetterneck, T. B., Rivera-Rodriguez, A. J., Hundt, A. S., Hoonakker, P., Holden, R., & Gurses, A. P. (2014). Human factors systems approach to healthcare quality and patient safety. *Applied Ergonomics*, 45(1), 14-25.
- Eason, K. (1995). New systems implementation. In J. R. Wilson & N. Corlett (Eds.), *Evaluation of Human Work* (Second edition ed., pp. 1055-1070). London, UK: Taylor & Francis.
- Hackman, J. R., Oldham, G. R., Janson, R., & Purdy, K. (1975). A new strategy for job enrichment. *California Management Review*, 17(4), 57-71.
- Haims, M. C., & Carayon, P. (1998). Theory and practice for the implementation of 'in-house', continuous improvement participatory ergonomic programs. *Appl Ergon*, 29(6), 461-472. Retrieved from http://ac.els-cdn.com/S000368709800012X/1-s2.0-S000368709800012X-main.pdf?_tid=ecd6332a-a7fb-11e4-9a5f-0000aacb360&acdnat=1422566298_1471d35988fdcf53593ba1139adb89c8
- Herzberg, F. (1974). The wise old Turk. *Harvard Business Review*, 52(September/October), 70-80.
- Karasek, R. A., & Theorell, T. (1990). *Healthy Work: Stress, Productivity and the Reconstruction of Working Life*. New York: Basic Books.
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- Steers, R. M., Mowday, R. T., & Shapiro, D. L. (2004). The future of work motivation theory. *Academy of Management Review*, 29(3), 379-387.
- Wooldridge, A. R., Carayon, P., Hundt, A. S., & Hoonakker, P. L. T. (2017). SEIPS-based process modeling in primary care. *Appl Ergon*, 60, 240-254. doi:<https://doi.org/10.1016/j.apergo.2016.11.010>