Syllabus

San José State University

Department of Psychology

PSYC 190: Current Issues Capstone: Human-Systems Integration in Cyber, Health, and Transport

Section 9, Spring 2022

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Instructor Contact Information

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Office Hours: 11:45-12:15pm Tuesdays and Thursdays; I am also available for in-person and Zoom appointments

Course Information

Classroom: Clark Building 303A

Class Days/Time: Tues. & Thurs., 10:30am – 11:45am

Prerequisite: PSYC 100W

Co/prerequisite: PSYC 118 or PSYC 120

This is a no-cost materials course.

Welcome!

My name is Dr. David Schuster, and you are welcome to call me 'Dave,' 'David,' or 'Dr. Schuster.' My preferred pronouns are he/him/his. I have been teaching since 2008 and a professor at SJSU since 2013. I earned my Ph.D. in psychology from the University of Central Florida. I am looking forward to being your instructor as we explore how psychological research can increase the safety and effectiveness of human-machine systems.

Course Description

In this capstone course, we will investigate how psychological research can be applied to large-scale systems of people and technology. We will focus on three important domains, cybersecurity, healthcare, and transportation. We will discover how they are similar and different from an applied research perspective. We will consider how different psychological perspectives inform solutions to societal problems. Through the process, you will practice and develop your skills as a researcher by developing a proposal for a new study.

The catalog description of this course is an: Integrative survey of current viewpoints and issues in psychology, how they developed and likely future directions of psychology.

This course builds on themes introduced in PSYC 173 (Human Factors) but does not require it.

Course Format

This is a technology intensive course. Required technology is described in the required materials section of this document.

Learning Outcomes

Program Learning Outcomes

Upon successful completion of the requirements for a major in psychology, students will be able to:

- PLO1 – Knowledge Base of Psychology – identify, describe, and communicate the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology

- PLO2 – Research Methods in Psychology – design, implement, and communicate basic research methods in psychology, including research design, data analysis, and interpretations

- PLO3 – Critical Thinking Skills in Psychology – use critical and creative thinking, skeptical inquiry, and a scientific approach to address issues related to behavior and mental processes

- PLO4 – Application of Psychology – apply psychological principles to individual, interpersonal, group, and societal issues

- PLO5 – Values in Psychology – value empirical evidence, tolerate ambiguity, act ethically, and recognize their role and responsibility as a member of society

Each assignment in this course maps onto one or more of these PLOs, with full coverage over all assignments in the course. PLOs 1-3 are emphasized in the first weeks of the course, and PLOs 2-5 are emphasized in the subsequent weeks of the course.

Course Learning Outcomes

The major goal of this course is to show students how applied psychological research informs practice in domains of human-technology interaction.

Upon successful completion of this course, students will be able to:

- CLO1 - Describe human-systems integration, appropriately use its fundamental terminology, and describe its importance in the effectiveness of cybersecurity, transportation, and healthcare systems

- CLO2 - Apply research, principles, and methods of human factors to human-machine system design, system evaluation, and training in cybersecurity, transportation, and healthcare systems.

- CLO3 - Describe how cognitive psychology, perception, industrial/organizational psychology, and the science of learning inform human-systems integration.

- CLO4 – Develop a novel research study and describe its hypotheses, variables, design, expected results, and research question.

The learning outcomes will be assessed via written assignments.

Required Materials

Canvas and E-Mail

All graded assignments will be accepted in electronic form using the Canvas learning management system assignments page (Canvas is available at https://sjsu.instructure.com/). Communication regarding the course will be posted to Canvas or sent via the e-mail address linked to your MySJSU account. It is your responsibility to make sure you are enrolled in Canvas and receiving my emails.

Required Texts/Readings

There is no textbook required for this course.

We will learn and practice how to derive meaning from scientific literature. Readings will emphasize primary sources and include supplemental readings. All reading assignments and are linked in the syllabus and will be provided on Canvas.

Computer

A laptop or tablet computer with Internet access will be necessary to participate in class activities and for your use outside of class. In lieu of a computer or tablet, a smartphone may be used but is unlikely to provide a good experience. You will need a keyboard. If you do not have a laptop or tablet computer available for this course, please meet with me to discuss free options for computer resources. I will work with you to find acceptable free computing resources.

We may occasionally hold meetings and activities via Zoom. A webcam and microphone are recommended but not required. For your security, I recommend that you disable and cover your webcam when not in use.

Virtual Lab Environment

This course may require use of software, such as R, Excel, Word, and SPSS. I will provide instruction in the use of the software; you do not need to start the course with this knowledge. You do *not* need to purchase licenses for any software.

You will be provided with access to a virtual lab environment with this software already installed. Instructions to access the virtual lab are available on Canvas. If you prefer, these software packages are also available to you at no cost for use on your own computer:

- RStudio

- R

- SPSS

- G*Power

- Adobe Creative Cloud

- Microsoft Office

- Google Drive

Grading Policy

Determination of Grades

Grades will be available to you on Canvas throughout the semester. Grades are assigned based on your final point total out of 1000 points for the course:

Grade	Points
A plus	> 965 points
A	916 to 965 points
A minus	896 to 915 points
B plus	866 to 895 points
B	816 to 865 points
B minus	796 to 815 points
C plus	766 to 795 points
C	716 to 765 points
C minus	696 to 715 points
D plus	666 to 695 points
D	616 to 665 points
D minus	595 to 615 points
F	< 595 points

Rounding is Included in the Grading Scale

The point totals reflect rounding up to the nearest percentage. For example, an A- would normally require 900 points (or 90% of 1000 points). With rounding, it only requires 896 points (or 89.6% of 1000 points). Because rounding is built into the grading scale, your grade will be based on your final point total, rounded to the nearest whole point (so, 895.6 points is an A-, but 895.4 points is a B+). To be fair to everyone in the class, these are firm cutoffs.

Course Requirements and Assignments

Weekly Reflections (26% of grade = 260 points)

A weekly reflection assignment will be available on each week's topic on Canvas. Completing the weekly reflection will require you to find one scientific article related to our upcoming discussion. Ten weekly reflection assignments will be worth 2.6% of your grade, for a total of 26% of your grade points. Each assignment will be graded satisfactory/unsatisfactory according to the rubric posted to Canvas. Unsatisfactory assignments will receive feedback and can be resubmitted during the semester without a grade penalty. Maps to CLO1-4.

Proposal Bibliography (9% of grade = 90 points)

A major part of this course will involve reading, considering, and discussing scientific literature available to us from the King Library. I will show you how to manage a collection of literature using the freely available Zotero service. You will be asked to submit your current annotated bibliography at three points during the semester. Each annotated bibliography assignment will be worth 3% of your grade, for a total of 9% of your grade points. Each assignment will be graded satisfactory/unsatisfactory according to the rubric posted to Canvas. Unsatisfactory assignments will receive feedback and can be resubmitted during the semester without a grade penalty. Maps to CLO2 and CLO4.

Proposal Drafts (40% of grade = 400 points)

You may write a paper describing an original qualitative or quantitative research study that could improve health, safety, or cybersecurity. The paper will be completed as a draft assignment and a final submission, each worth 20% of your grade. Each assignment will be graded satisfactory/unsatisfactory according to the rubric posted to Canvas. If you submit a complete but unsatisfactory assignment, you will receive feedback and be allowed to resubmit the assignment without penalty. Unsatisfactory assignments will receive feedback and can be resubmitted during the semester without a grade penalty. Maps to CLO4.

Proposal Presentation (25% of grade = 250 points)

You will be asked to present your final proposal at a scientific conference in the form of an oral presentation, poster, or paper. This assignment will be completed in a series of steps for credit. First, you may prepare an abstract describing your presentation and submit it to both your professor and the Spartan Annual Research Conference (SPARC) for 5% of your grade. Second, you may give your presentation to our class in the final two weeks of our course and/or present your talk at SPARC for 20% of your grade. Your presentation must include all required elements described in the directions on Canvas; complete presentations will receive full credit. Note that this is the only assignment where it may not be possible to repeat an unsatisfactory assignment before the end of the class. Maps to CLO4.

Description of Capstone Requirements

As a capstone course, the following requirements will be met:

- Demonstrated Learning Requirement: Students will develop a viable, original research study.

- Competence in oral and written communication: Students will author a proposal describing their study and present their proposal in the form of an oral presentation.

- Integration of skills across the major: Students will use skills developed throughout their degree to develop an original study. The course will explicitly consider how cognitive psychology, perception, social psychology, industrial/organizational psychology and the science of learning inform human-systems integration research.

- Library use: All source materials are available in the library. Students will use the library to find additional references.

- Critical evaluation of literature and research reports will be emphasized in class and small-group discussions.

- Application of existing literature to human-systems integration is a central skill developed in the course.

- Deliverables include a paper and presentation incorporating critical evaluation of literature.

Enagement Activities

Engagement activities are prerequisites for completing weekly assignments. Engagement activities do not directly impact your final grade.

For each course module, several engagement activities will be posted to Canvas. Engagement activities are designed to help you build your knowledge and practice your skills without any consequences for failure. For example, one engagement activity might involve attending a class discussion and writing a short reflection. Engagement points are awarded for activity completion; engagement points are not worth any grade points. However, you need 100 engagement points in the current module in order for your weekly assignment to be graded. Therefore, I encourage you to complete engagement activities first before attempting the weekly assignment.

Weekly Assignments

Weekly assignments are 90% of your final grade (900 points total).

One graded assignment will be posted to Canvas most weeks worth approximately 75 points. The weekly assignment is an assessment of the knowledge and skills you have developed through engagement activities. Most assignments will have multiple parts and will require analysis of a novel data set and write up. All submitted assignments must use APA style, but no manuscript formatting is necessary unless stated (e.g., you do *not* need to include a title page, abstract, etc.).

Each graded assignment will be scored as satisfactory/credit or unsatisfactory/no credit. An assignment labeled satisfactory/credit will earn full points. An assignment labeled unsatisfactory/no credit may be revised and resubmitted without penalty. You will receive feedback for any unsatisfactory/no credit assignment. A rubric for assignment grading will be posted to Canvas.

You may discuss your weekly assignment with your classmates but you must perform your own analyses and do your own writing. When you submit a weekly assignment, you are claiming it as your own writing and analysis. If you use words or ideas from other sources, they must be quoted or cited. SJSU has a 15-minute, online plagiarism tutorial that is worthwhile as a refresher of this important issue of academic integrity.

One course meeting each week will be dedicated to discussion and work on your current assignment.

Research Proposal

The research proposal is 10% of your final grade (100 points total).

As part of the applied project, you will conduct an analysis of an existing dataset. The complete applied project will include an abstract, introduction, methods section, results, and discussion. Drafts of each component will be completed as part of the weekly assignments throughout the course. You will present your applied project during the final exam period. A rubric with more complete instructions will be posted on Canvas, but because this assignment is completed over a series of milestone assignments throughout the semester, it is anticipated that successful completion of all requirements of the project, including the presentation, will earn full points. Your final applied project must be compiled into one document and submitted separately to earn credit.

Resubmission, Make-ups, and Grading Process

You can resubmit graded assignments without penalty.

Any assignment that receives a grade of unsatisfactory/no credit may be revised and resubmitted. Assignments may be submitted at any time until 11:59pm on the last day of instruction for the semester. At that time, all unsubmitted and unsatisfactory/no credit assignments will receive zero points. Should an event

prevent you from completing the course, contact me as soon as you are able to discuss our options for an incomplete.

We will work together on make-ups of scheduled activities.

Class activities that are scheduled, such as a guest speaker, cannot be recreated easily. If you miss a scheduled class activity, my default recommendation is to forgo the engagement points for that activity and earn them in other activities available for that week. Depending on the specifics of your situation, that may or may not be a good solution. If it is not, let me know and I will work with you to make up a missed scheduled activity by offering an alternative assignment. If I become concerned about excessive use of this option, I will discuss it with you. Finally, this is not an appropriate mechanism for extended absences from class; if you anticipate being absent from class, contact me as soon as you become aware of it.

For all other class activities, no makeup policy is needed.

I will grade your assignments in order.

- You may submit assignments in any order and at any time before the end of instruction. However:
    - Because of the grading policy and scheduling of some class activities, you are strongly encouraged to work on the course material in order, as scheduled, and to submit assignments in order with enough time for them to be graded and resubmitted. The grading criteria for assignments will be the same regardless of whether the assignment is turned in early or near the end of the semester.
    - Because engagement activities are preparation for the weekly assignment, you are strongly encouraged to do the engagement activities before starting the assignment.
- I will only grade your weekly assignment once you have required number of engagement points as stated on Canvas.
- I will only grade the first weekly assignment you have not yet completed.
- I will provide you with timely grades and feedback. I will catch up on grading at a minimum of once per week. I will provide feedback on all assignments you submit before the last week of instruction. If you submit assignment(s) less than one week before the end of instruction for the semester, I will not be able to provide feedback on those assignments.

An example of might help:

Imagine you work ahead and do all the engagement activities for Week 1 and Week 2. Then, you complete and submit the weekly assignment for Week 2, skipping Week 1. I see your submission, but I do not start grading it until you submit your assignment for Week 1. Next, imagine you then receive *no credit* for your Week 1 submission. You would need to revise, resubmit, and earn credit for your Week 1 assignment before I would grade Week 2. Imagining you got credit on your second attempt for Week 1's assignment, I would then grade your Week 2 assignment automatically.

As this example shows, the course offers some flexibility but will work best if you complete the coursework in order.

You might 'fail' an assignment or a few; that is normal.

The reality of this course structure is that you may receive no credit/unsatisfactory weekly assignment grades from time to time. This might be a novel or uncomfortable experience for you as a capstone student, because: (1) you probably have been doing well in college, and (2) college has norms where low grades are 'bad.' *I encourage you to challenge this unhelpful mindset.* This is a course designed for you to 'fail' quickly, learn, and succeed. This structure is similar to graduate school and to professional research, which also involves a process of trying, getting feedback, revising, and moving forward.

Track your progress frequently.

I am available to discuss your progress in the course at any time. To help you plan for your grade, you are encouraged to enter your scores in my progress report tool available on my web site.

Final examination or evaluation

Faculty members are required to have a culminating activity for their courses, which can include a final examination, a final research paper or project, a final creative work or performance, a final portfolio of work, or other appropriate assignment.

The culminating activity for this course will be the submission of the final research paper and delivery of the presentation.

Classroom Environment

We agree to:

- **Mutual respect**, which means that we recognize and value that we bring different skills, experiences, and qualities to our course, and we act with regard for how our behavior affects others. As much as we can, we recognize and accommodate individual constraints that impact our work. Some ways we will show mutual respect include:

    - Affirming that intolerance, including racism, sexism, xenophobia, transphobia, and homophobia will not be acceptable in the physical and digital spaces that make up our course.
    - Respecting our and others' intellectual property. For students, this includes not sharing or posting copyrighted class materials. For instructors, this includes seeking permission before sharing or posting student work (unless for an educational purpose, checking for or responding to academic dishonesty, or due to legal action). Your work may be sent to turnitin.com and processed through search engines to detect plagiarism. However, I will not allow turnitin.com to store your work in their repository.
    - We understand that we have multiple obligations and limited time. Our meetings will start promptly at times convenient for both of us.
    - We understand that we are all doing our best as we face our own challenges. I will expect that you put in reasonable effort on your assignments. You can expect patience and help whenever you struggle with course material. And, I am always available to meet with you should life events impact your progress in the course or success in your program.

- **Academic and professional integrity**, which means that the credibility of science and education depends on us acting ethically. Ethical violations by us or our collaborators can jeopardize our research and harm our reputation as researchers. We also know that we cannot act ethically if we do not understand what that means for researchers. Therefore, it is important that research ethics are part of your learning in this class. You can expect support and guidance when you navigate and speak up on challenging ethical situations. You can also expect no tolerance of ethical or academic integrity violations that negatively affect our class or community, including cheating and plagiarism. You can expect your instructor to follow all University policies and protocols regarding the handling of suspected academic dishonesty. Penalties can include failure of the course.

- **Unlimited support** related to the class or your professional training and development. This means that there is no limit to the number of questions you may ask, e-mails you may send, and no restriction on the hours you can spend in meetings with me. You need never apologize for asking a question or seeking support. Time is limited but support is not; if the volume of student meetings were to become

unmanageable, I will make adjustments to help all students more efficiently (for example, by answering a common question to the whole class). I am always happy to help you.

- **Incorporation of issues of social justice**. It is my goal to help prepare you to tackle the major societal challenges we face, including COVID-19 and broader issues of equity and sustainability. Success against these challenges requires equitable participation by people of diverse backgrounds and experiences. To support this goal, this course will incorporate discussion of social justice when relevant to the course and support your evaluation of how our discipline has/can/will address social justice, as well as how it has contributed to social injustice.

University Policies

Per University Policy S16-9,relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on Syllabus Information web page. Make sure to visit this page to review and be aware of these university policies and resources.

You must obtain the instructor's permission to make any audio or video recordings in this class.

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Library Liaison

Our library liaison is Christa Bailey. Email: christa.bailey@sjsu.edu

Additional Information

All assignments in this course should be submitted in APA format. The writing requirement is described above.

Course Schedule

The course schedule is tentative and likely to change; modifications will be posted to this page.

Week	Date	Topics	Weekly assignments
1	Thu., Jan. 27	Introduction	
2	Tue., Feb. 1	What are some of our problems involving people and technology?	
	Thu., Feb. 3		
3	Tue., Feb. 8	What is a sociotechnical system?	
	Thu., Feb. 10		
4	Tue., Feb. 15	How do the domains understand human-systems integration?	
	Thu., Feb. 17		
5	Tue., Feb. 22	Challenges to field research in sociotechnical systems	

Week	Date	Topics	Weekly assignments
	Thu., Feb. 24		
6	Tue., Mar. 1	Qualitative vs Quantitative Research Methods	
	Thu., Mar. 3		
7	Tue., Mar. 8	Training & Science of Learning	
	Thu., Mar. 10		
8	Tue., Mar. 15	Cognitive Perspective, Part I	
	Thu., Mar. 17		
9	Tue., Mar. 22	Cognitive Perspective, Part II	
	Thu., Mar. 24		
X	Tue., Mar. 29	Spring Recess, No class meeting (Thu.)	
	Thu., Mar. 31		
10	Tue., Apr. 5	Science of Teams	
	Thu., Apr. 7		
11	Tue., Apr. 12	Elements of a Compelling Proposal	
	Thu., Apr. 14		
12	Tue., Apr. 19	Translating Research to Practice	
	Thu., Apr. 21		
13	Tue., Apr. 26	Proposal development week	
	Thu., Apr. 28		
14	Tue., May 3	Individual student meetings or guest speaker	
	Thu., May 5		
15	Tue., May 10	Individual student meetings or guest speaker	
	Thu., May 12		
End	Mon., May 16	Last day of instruction, assignment submission ends 11:59 pm	
Final	Fri., May 20	Proposal presentations, 9:45am - 12:00pm	