Course Syllabus

Jump to Today

Systems Integration SYS605

School of Systems and Enterprises

Instructor: William "Bill" Glass

Canvas Course Web Address: **https://sit.instructure.com/courses/69521 (https://sit.instructure.com/courses/69440/)**

Course Schedule: Found in Canvas

Instructor's Online Hours

I will be available via Canvas Mail and will respond as soon as I am available (generally within 24-48) hours. For the online discussions, I will check in at least 2 times per week. Keep in mind that it is not possible for me to respond to every single posting every week, but I will be sure to respond to a variety of postings and students each week and attempt to assure equality in terms of responses to students.

Live Virtual Check In

Virtual Office Hours are a synchronous session (through Zoom) to discuss questions related to weekly readings and/or assignments. Office hours will be held Tuesday evenings from 8:00 p.m. - 9:00 p.m. Eastern time

COURSE DESCRIPTION
This course is designed to provide the participants with an understanding of the scope of systems integration (SI); different SI approaches to architect, design, implement, verify, and validate integrated systems; tools and techniques to measure the successful implementation of SI; and best practices. The objective of the course is to provide the students with an understanding of the technical and business process issues involved in systems integration. Our end-to-end approach focuses on how integration issues can be addressed up-front to minimize integration-related complexities and challenges later on in the system engineering process. The SI activities have to be directed towards the architecture and design of systems that are easy to integrate or in other words "integration-friendly" or "integration-ready" (ready to be integrated) systems. Therefore, the challenge is to

understand the impact of system architecture and design on integration complexity. The focus of our approach is on pre-empting integration issues upfront in the process. Identifying the best practices that will ensure this upfront focus is the challenge that projects need to manage. The students will appreciate the role of system architecture and design in influencing system integration complexity, theory and practice of business process integration, legacy integration, new systems integration, COTS integration, application integration, architecture integration, and integrated program management. Specific focus will be given to issues of interoperability, openness, interface control and management, verification and validation, system testability, and the final acceptance of the system. Systems Integration (SI) holistically leverages the model-based approach of SYS625 Fundamentals of Systems Engineering and SYS650 System Architecture & Design.

STUDENT LEARNING OUTCOMES

After successful completion of this course, students will be able to...

- Understand the relationship between system architecture and system integration and appreciate the importance of well-chosen and well-designed interfaces for minimizing

  integration risk.

- Understand the relationship between system requirements and verification testing and appreciate the importance of ensuring that requirements are testable when written.

- Understand the relationship between stakeholder needs and system validation and appreciate what it takes to demonstrate to customers and users that their needs have

  been fully met.

- Develop plans for systematically integrating a complex system, verifying that it meets its specifications at every architectural level, and validating that it satisfies the needs of its

  customers, its users, and other key stakeholders.

- Represent needs of integration, verification, and validation needs early in the system lifecycle during the requirements phase.

- Design effective verification and validation systems and identify the resources required to implement and operate them.

- Design verification tests to ensure that system specifications are met at every architectural level.

- Design validation tests to demonstrate that customer and stakeholder needs are fully met.

- Utilize a wide range of testing methods and tools to accomplish system verification and validation.

COURSE FORMAT AND STRUCTURE

This course combines Zoom lectures, readings, case studies, discussion questions, and exercises to develop an understanding of the systems integration concepts. The team project allows participants to apply and integrate their knowledge in a team environment to exercise systems integration fundamentals and techniques.

This course is fully online. To access the course, please visit stevens.edu/canvas . For more information about course access or support, contact the Technology Resource and Assistance Center (TRAC) by calling 201-216-5500.

Course Logistics

- You are encouraged to "mentally enroll" in this course as if it occurred on Tuesdays. In other words, our weeks will run from Tuesday to Monday. I will post information (online activities, discussion starters, etc.) for the upcoming week by Monday evening so that when you log in on Tuesday (except for the first week lecture week), you can begin the new week.

- Lecture content will be available for reading. Zoom lectures will also be available in a recorded format.

- Deadlines are an unavoidable part of being a professional and this course is no exception. Course requirements must be completed and posted or submitted on or before the specified due date and delivery time deadline. Due dates and delivery time deadlines are defined as Eastern Time (as used in Hoboken, NJ). Please note, students living in distant time zones or overseas must comply with this course time and time and due date deadline policy.

Online Etiquette Guidelines

Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Our differences, some of which are outlined in the University's inclusion statement below, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambiance. Please read the Netiquette rules for this course:

- Do not dominate any discussion. Give other students the opportunity to join in the discussion.

- Do not use offensive language. Present ideas appropriately.

- Be cautious in using Internet language. For example, do not capitalize all letters since this suggests shouting.

- Avoid using vernacular and/or slang language. This could possibly lead to misinterpretation.

- Keep an "open mind" and be willing to express even your minority opinion.

- Think and edit before you push the "Send" button.

- Do not hesitate to ask for feedback.

TENTATIVE COURSE SCHEDULE
Changes to the course schedule will be posted as updates on the assignment in Canvas.

COURSE MATERIALS

Textbook(s):

Dennis M. Buede and William D. Miller, The Engineering Design of Systems: Models and Methods, 3rd edition, [EDofS] John Wiley & Sons, 2016.
Posted in Canvas

Recorded materials posted in Canvas
Vitech Corporation GENESYS Software
Design Structure Matrix (DSM) Macros in Microsoft Excel

TECHNOLOGY REQUIREMENTS

Baseline technical skills necessary for online courses

• Basic computer and web-browsing skills • Navigating Canvas

Technology skills necessary for this specific course

• Live web conferencing using Zoom
• Recording a slide presentation with audio narration

Required Equipment

- Computer: Mac (OS 11 + VMWare or Parallels + Windows for GENESYS) or PC (Windows 10+)

with high-speed internet connection

- Microphone: built-in laptop or tablet mic or external microphone

- Optional: Webcam: built-in or external webcam, fully installed

  Required Software

  • Microsoft Word
  • Microsoft Excel
  • Microsoft PowerPoint
  • Vitech GENESYS
  • Design Structure Matrix Macros in Excel

GRADING PROCEDURES

Assignment	Weight
Discussion Questions	
Total	100%

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Late Policy

The Final Individual Project will not be accepted late.

Discussion posts will close 2 weeks after the submittal date.

Academic Integrity

Graduate Student Code of Academic Integrity

All Stevens graduate students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.

All graduate students are bound to the Graduate Student Code of Academic Integrity by enrollment in graduate coursework at Stevens. It is the responsibility of each graduate student to understand and adhere to the Graduate Student Code of Academic Integrity. More information including types of violations, the process for handling perceived violations, and types of sanctions can be found at www.stevens.edu/provost/graduate-academics.

LEARNING ACCOMMODATIONS

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

For more information about Disability Services and the process to receive accommodations, visit https://www.stevens.edu/office-disability-services. If you have any questions please contact: Phillip Gehman, the Director of Disability Services Coordinator at Stevens Institute of Technology at pgehman@stevens.edu or by phone 201-216-3748.

Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

INCLUSIVITY

Name and Pronoun Usage

As this course includes group work and class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform the instructor of the necessary changes.

Inclusion Statement

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in academic discourse and innovation. In this class, the perspective of people of all races, ethnicities, gender expressions and gender identities, religions, sexual orientations, disabilities, socioeconomic backgrounds, and nationalities will be respected and viewed as a resource and benefit throughout the semester. Suggestions to further diversify class materials and assignments are encouraged. If any course meetings conflict with your religious events, please do not hesitate to reach out to your instructor to make alternative arrangements.

You are expected to treat your instructor and all other participants in the course with courtesy and respect. Disrespectful conduct and harassing statements will not be tolerated and may result in disciplinary actions.

MENTAL HEALTH RESOURCES

Part of being successful in the classroom involves a focus on your whole self, including your mental health. While you are at Stevens, there are many resources to promote and support

mental health. The Office of Counseling and Psychological Services (CAPS) offers free and confidential services to all enrolled students who are struggling to cope with personal issues

(e.g., difficulty adjusting to college or trouble managing stress) or psychological difficulties(e.g., anxiety and depression) and who can visit the office in person. CAPS is open from 9:00

am – 5:00 pm Mondays, Wednesdays, Thursdays and Fridays and from 9:00 am – 7:00 pm on Tuesdays during the Fall and Spring semesters; appointments are highly encouraged. For

those students who cannot visit the Stevens campus for an in-person appointment, you can contact a local mental health care provider for an in-person appointment, or if you are enrolledin the Stevens Student Health Insurance, you may call Care Connect for 24/7 mental health support at 1-888-857-5462.

EMERGENCY INFORMATION

In the event of an urgent or emergent concern about the safety of yourself or someone else in the Stevens community, please immediately call the Stevens Campus Police at 201-216-5105 or on their emergency line at 201-216-3911. These phone lines are staffed 24/7, yearround. For students who do not reside near the campus and require emergency support, please contact your local emergency response providers at 911 or via your local police precinct. Other 24/7 national resources for students dealing with mental health crises include the National Suicide Prevention Lifeline (1-800-273-8255) and the Crisis Text Line (text "Home" to 741-741). If you are concerned about the wellbeing of another Stevens student, and the matter is not urgent or time sensitive, please email the CARE Team at care@stevens.edu. A member of the CARE Team will respond to your concern as soon as possible.

Course Summary:

Date	Details	Due
	📅 **Office Hours (https://sit.instructure.com/calendar?event_id=283450&include_contexts=course_69440)**	7pm to 8pm
	📅 **Office Hours (https://sit.instructure.com/calendar?event_id=283470&include_contexts=course_69440)**	7pm to 8pm
Mon Jun 26, 2023	📅 **Live Session (https://sit.instructure.com/calendar?event_id=283461&include_contexts=course_69440)**	8pm to 9pm
	📅 **Live Session (https://sit.instructure.com/calendar?event_id=283467&include_contexts=course_69440)**	8pm to 9pm