



Course ISM 6124:
Advance System Analysis & Design (ASAD)
3 Credit Hours
Muma College of Business

COURSE SYLLABUS

Last Updated: 10/22/2023

Semester:	Summer "C", 2023
Class Meeting Days:	Online
Class Meeting Time:	Online
Class Meeting Location:	Online
Instructor:	Dr. Bhuvan UNHELKAR
Office Location:	C225, College of Business, Sarasota-Manatee Campus
Office Hours:	Online
Phone:	MS Teams (Canvas messages Preferred)
Email:	bunhelkar@usf.edu

I. Welcome!

Welcome to the Course: Advance System Analysis & Design (ASAD). This course is designed to equip you with the professional skills of designing software systems beyond simply writing good code and create a database. Most large-scale software development (and maintenance) work requires excellence in "modelling" the software - that is, create good designs and validating them before writing code. The entire course revolves around designing great software models that immediately increase the quality and value of your software solution. Software models also reduce rework and improve the productivity. Modeling is also a great way to enhance communications within a software development project - especially if such project is "outsourced" to another development shop.

II. Course Prerequisites

This course has no officially set pre-requisites. Students are, however, expected to have good understanding of software development. This course does NOT include any programming – however, you need to have a good idea of ANY programming language in order to maximize the value to derive from this course. Appreciation of programming concepts will obviously help you in creating great software designs. An important soft-skill you will need, however, is ability to collaborate with fellow students in a Team. This is an important prerequisite, if you like. Please be prepared to collaborate to design ONLINE.

III. Course Purpose

This course provides a robust grounding in the principles and practices of Object-Oriented (OO) software modelling in order to produce great software system designs. This course uses the ISO 19505 standard for software modeling - the Unified Modeling Language (UML) as the modeling standard for designs. The StarUML is used as an opensource modeling tool (although you are welcome to use Microsoft's Visio or any other tool especially if you are already working in a software project).

Any advanced effort at systems analysis and design is based on user requirements and development of corresponding designs. Due to the fast-paced nature of this course, we will not be developing detailed requirements – but directly jumping to the designs from the problem statements. We do develop an approach to Architecture of the solution and also verify and validate designs.

As part of pre-reading and developing a better understanding of the purpose of this course, please open the textbook for this course Software Engineering with UML - and go through the Preface (Pages xxiii to xxvi). These pages of the text book will tell you some more on my views of software modeling and why I consider this as an important course to build you up as a software professional.

IV. How to Succeed in this Course

Successful students should follow several practical tips before each online session:

1. Check Canvas and emails daily for announcements
2. Close down other programs and apps before class begins
3. When possible, plug in to a wired internet connection, rather than rely on WiFi
4. Read the instruction page for the Discussion questions, Team collaborations, and Quizzes
5. **Work in Team Projects where required in a collaborative manner. ONLINE collaboration requires discipline and responsibility towards the entire team. This is a CRUCIAL learning objective and learning experience of this course.**
6. Submit ALL assignments (discussion questions) in time and NOT wait for any reminders
7. Attempt ALL assignments – please do NOT leave any assignments un-attempted even though you may doing very well in the ones you have already attempted. Making an honest attempt at all assignments and achieving a minimum score (as specified in each assignment) is absolutely crucial for success in this course.
8. For any delays in submission, please reach out to your professor promptly and explain the reasons (except in medical emergencies where you simply can't reach out)
9. Maintain high-level of honesty and ethical behavior throughout the course
10. **Maintain total respect towards your Professor / Instructor and your fellow students**
11. If new to Canvas, read [this guide](#)

V. Student Learning Outcomes

At the completion of this course, students will be able to:

1. Demonstrate the knowledge of systems design with specific focus software modelling
2. Undertake advanced designs of high-quality software systems and applications
3. Undertake systematic modeling of requirements and solutions design using the principles of Object-Oriented and the Unified Modeling Language (UML) standard
4. Demonstrate the ability to use of a Software Modeling tool in a team environment in order to create practical OO designs with UML
5. Recognize the importance of Architecture, Patterns, Reuse and Granularity in system designs.
6. Demonstrate the ability to develop a Quality assurance and Testing strategy for an advanced software solution.
7. Undertake team work and communicate effectively in a team environment to enable delivery of software solutions within given time constraints

VI. Required Texts and/or Readings and Course Materials

Required (*Note: This text book is made FREELY available by USF's Textbook Adoption Program (TAP). Please see Canvas course for details on how to download this material for your study:*

Unhelkar, B., (2018), *Software Engineering with UML*, CRC Press, (Taylor and Francis Group /an Auerbach Book), Boca Raton, FL, USA. Foreword Scott Ambler. ISBN 978-1-138-29743-2

VII. Supplementary (Optional) Texts and Materials

- Fowler, M., *UML distilled: 3rd Edition* Addison-Wesley
- **Unhelkar, B.**, "The Art of Agile Practice", (CRC Press, 2013)
- **Unhelkar, B.**, (2005), "Verification and Validation for Quality of UML Models", *John Wiley and Sons*, (Wiley Interscience), July, 2005; Clothbound, Pages 290+. ISBN: 0471727830 (Foreword by Prof. Brian Henderson-Sellers, UTS, Sydney, Australia)
- **Unhelkar, B.**, (2003), "Process Quality Assurance for UML-based Projects" Pearson Education (*Addison-Wesley*), Boston, 2003; (394 Pages + CD. Foreword by Vicki P. Rainey, Raytheon Corporation, USA). ISBN 9 780201-758214

Other materials (including Youtube/Ted talk videos etc.) will be shared in class.

VIII. PERFORMANCE EVALUATION AND GRADING:

Student performance is evaluated based their regularity in posting to and participating in the classroom Discussion questions around the weekly study topics. Performance is also evaluated through Team Project and quizzes.

Please note that late assignments will be accepted only with fully justified and documented reasons *as per university guidelines*. Also, please note, late assignments will be penalized in order to maintain equitability with fellow students.

A late submission of Assignment/quiz will not be considered valid and all points forfeited if: (a) Student has been reminded once and yet no action is taken by the student; (b) Assignment solution has been discussed in the class, (c) Correct answers to the assignment / quiz have been provided to the class.

The relative weights for each of these components in determining the final grade are as follows (please also note the key evaluation rubric description, next to the percentages):

Discussion Questions and online participation 30% (Critical Thinking, Communication). There are 6 discussion questions – one in each study week of the course. These are essay style posts made by you as you apply your critical thinking skills in discussing and reflecting on the question provided. What is learnt in the modules AND what is explored/researched/experimented by you goes into these discussion posts. The discussion questions are posted at the end of the relevant module and, in some cases, derived from the end of the book chapter. You read the question carefully, think, reflect, research and post an answer. **After posting your answer**, you will be able to see the posts made by your fellow students. Once you see the posts from fellow students, select at least one post, read it carefully and offer a critique. This posting and counter-posting of discussions is an important learning mechanism. Through participating in these discussion questions students are able to consolidate their knowledge, observe different thinking and interpretation by fellow students and how they themselves may have a unique viewpoint on the topic being discussed. Written communications skills are further sharpened especially in an online format through this exercise.

In order to encourage you to post early to enable a discussion to happen sooner, first couple of “sensible, acceptable” posts may get additional, bonus points. (Please note, these are strictly bonus points for encouragement to post early).

Students need to note that it is important to score at least 40% points in this assessment task in order to pass this course. Not submitting a discussion post is **not** acceptable in this course. Maintaining UTMOST courtesy towards your fellow students and your professor as you enter these discussions is also a vital requirement of this assignment. *Please note that this is an individual assignment and each student is graded based on her/his work.*

Team Project 30% (Critical Thinking, Team Work, Communication) – The team project forms an **absolutely critical part of evaluation** in this course. Students are put together in a team (typically 5 students) and provided with a case study problem statement. You apply the knowledge gained in the modules to the case study and put together the deliverables in the form of a **Report** and a **Model of the System** at the end of the course. A template for the report, which is a combination of some description and mostly the diagrams drawn, is provided. Your report showcases your understanding of how you have worked through the designs in a ‘near real life’ case study (that is provided). Please further ensure that your report is professional looking and free from basic English errors (like spelling mistakes and formatting). The report and the Model submitted will be assessed TOGETHER. There is no presentation of the work. Since this is an online course, it’s vital that students start collaborating with each other online as soon as they start the study. Reaching out to fellow students in the team and responding to their messages is integral to a good, collaborative online work environment. This online collaboration is a mandatory requirement of this course as it will require students to not only use their critical thinking skills but also learn, develop and apply their ability to communicate *online* and work in an *online* team environment.

Students need to note that it is important to score at least 40% points in this Team Project assignment in order to pass this course. Not submitting this assignment is **not** acceptable in this course. *Please note further that this is a TEAM assignment and single, common points are awarded to the ENTIRE TEAM.*

2 Quizzes (Mid-term & Final) 40% (Critical Thinking) – These two quizzes (Mid-term 20% and End-term, 20%) are primarily multiple-choice online quizzes which are based on the material covered in the Modules. Students apply critical thinking skills to the questions resulting in validation and consolidation of their knowledge gained. The Mid-term and End-term quizzes are exclusive to each other – which means the modules covered by the Mid-term quiz are not again required to be covered in the End-term or Final quiz. Quizzes are drawn from a pool of questions – therefore questions may change for each student in each attempt of the quiz. Students need to note that it is important to score at least 40% points in this assignment in order to pass this course. Not appearing in the quizzes is **not** acceptable in this course. *Please note that this is an individual assignment and each student is graded based on her/his work.*

Total 100%

A grade will be determined based on the total of possible points earned, as follows:

A 90-100; B 80-89; C 70-79; D 60-69; F 0-59.

Further granularity of the grades with + and – will be part of the final grade.

*Important Note: This course requires you to attempt ALL assessments listed above (Discussion questions, Team Project and Quizzes). Leaving any of these assessment items un-attempted will mean an “I” for Incomplete grade. For example, sometimes, a student has excellent points in some assessment tasks and that he/she will proceed with an assumption that a “0” point score for a quiz or team project is okay because overall points are good. This is **not** an acceptable situation in this course. All assessment items **MUST** be attempted in all honesty by the students with a minimum of 40% points.*

Important Note#2: Late submissions WILL incur a penalty.

IX. Course Schedule

* Note: The Schedule is subject to small changes as we progress through the semester.
(Please see the DATES and Modules corresponding to the Weekly Activities on CANVAS – under Schedule)

X. Standard University Policies

Policies about disability access, religious observances, academic grievances, academic integrity and misconduct, academic continuity, food insecurity, and sexual harassment are governed by a central set of policies that apply to all classes at USF. These may be accessed at: <https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx>

XI. Covid-19 Procedures

All students must comply with university policies and posted signs regarding COVID-19 mitigation measures, including wearing face coverings and maintaining social distancing during in-person classes. Failure to do so may result in dismissal from class, referral to the Office of Student Conduct and Ethical Development, and possible removal from campus.

Additional details are available on the University’s Core Syllabus Policy Statements page: <https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx>

The health and safety of students, faculty, staff and visitors on our campuses is our top priority. In response to the current COVID-19 pandemic, the USF community will be working together to support compliance with recommended health and safety standards to optimize the learning experience while minimizing health risks. The Conduct Expectations for all members of the community may be accessed at [Conduct Expected to Support USF Health and Safety Standards](#) with details provided below:

Students and faculty will be guided by established USF processes to ensure the safest possible non-disruptive environment including the:

(1) [Academic Disruption Regulation](#) which provides for an immediate removal or restriction from a classroom setting with academic sanctions and/or

(2) [Student Conduct Regulation](#) to address conduct that is inconsistent with the expectations as outlined below:

1. **Complete daily screening as requested.** Anyone experiencing one or more COVID-19 symptoms should not be on campus or, if a resident, should not be outside their residence hall room and should contact a medical provider immediately and follow their guidance. Please inform your instructor prior to the beginning class if your screening indicates the need for further evaluation and you will not be in class.
2. **Wear face coverings.** All members of the USF community are required to wear face coverings while in classrooms or any other shared space, including specified public or common-use areas where social distancing guidelines cannot be followed. See this link on [How To Make A Face Mask](#). If you have to use a disposable face mask, please discard it in a trash receptacle immediately after use.
3. **Maintain social distancing.** All students, faculty, staff and guests are required to maintain a safe distance from one another. Social distancing is maintained in all indoor and outdoor spaces which are owned or controlled by USF. Stay at least 6 feet (about 2 arms' length) from other people, do not gather in groups, stay out of crowded places and avoid mass gatherings. See the CDC for information on [Social Distancing](#). Please sit in only designated areas in class and do not move chairs or desks in classrooms or common spaces.
4. **Practice good hand hygiene.** Individuals should wash their hands with soap and water for at least 20 seconds as often as possible or use personal hand sanitizers containing at least 60% alcohol. Hand sanitizer stations are available throughout the campus. If you see one, use it! See the CDC recommendations on [Hand Hygiene](#).
5. **Disinfect your classroom space.** Students and faculty are responsible for disinfecting areas within their workspaces by cleaning these at the beginning and end of each class. This includes desk tops, seats, and equipment used during class. Disinfectant supplies will be provided. If paper towels are used to disinfect, they must be discarded in a trash receptacle immediately after use.

GRADING, EVALUATION AND ATTENDANCE POLICIES:

- A. Per USF policy, you receive a graded assignment or examination prior to the semester's [drop/withdraw date](#).
- B. Specifically state the value of and the manner in which each assignment in the syllabus will be evaluated or graded. **Periodic reports on project progress are a contributing factor to the final grade.**
- C. The course grade includes an assessment on how well you have demonstrated the five learning outcomes listed above. We will use the straight A,B,C,D and F system, point system.
- D. This course does not require any class attendance. However, **periodic updates on project progress, issues encountered, hurdles, etc. will be communicated – and, in rare cases, a face-to-face meeting organized by the faculty in charge.**
- E. **The notes, videos, quizzes etc. provided for your study in this class is intellectual property of the faculty. Students are NOT permitted to post the study material and quizzes anywhere online on the internet.**

USF System Policies

Policies are available in the [USF Catalog](#) and at regulationspolicies.usf.edu.

- A. **Academic Dishonesty:** The University considers any form of plagiarism or cheating on exams, projects, or papers to be unacceptable behavior. Please review the [USF System Regulation USF3.027 Academic Integrity of Students](#) and the [USF System Regulation USF6.0021 Student Code of Conduct](#).
- B. **Academic Disruption:** The University does not tolerate behavior that disrupts the learning process. Please review [USF System Regulation USF3.025 Disruption of Academic Policy](#).
- C. **Contingency Plans:** In the event of an emergency, it may be necessary for USF (SM) to suspend normal operations. During this time, USF (SM) may opt to continue delivery of instruction through methods that include but are not limited to: Canvas, online conferencing/collaboration tools, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor Canvas for each of their classes for course specific communication, as well as the USF (SM) website, their student email account, and [MoBull](#) messages for important general information. The USF hotline at 1 (800) 992-4231 is updated with pre-recorded information during an emergency. See the [Campus Police Website](#) for further information.
- D. **Accessibility Accommodation:** Students are responsible for registering with the Office of Students Accessibility Services (SDS) in order to receive academic accommodations. Reasonable notice must be given to the SDS office (typically 5 working days) for accommodations to be arranged. It is the responsibility of the student to provide each instructor with a copy of the official Memo of Accommodation. Contact Information: Students Accessibility Services Coordinator, 941-359-4714, disabilityservices@sar.usf.edu, [http://USF \(SM\).edu/disability-services/](http://USF(SM).edu/disability-services/)
- E. **Fire Alarm Instructions:** At the beginning of each semester please note the emergency exit maps posted in each classroom. These signs are marked with the primary evacuation route (red) and secondary evacuation route (orange) in case the building needs to be evacuated. See [Emergency Evacuation Procedures](#).
- F. **Religious Observances:** USF (SM) recognizes the right of students and faculty to observe major religious holidays. Students who anticipate the necessity of being absent from class for a major religious observance must provide notice of the date(s) to the instructor, in writing, by the second week of classes. Instructors canceling class for a religious observance should have this stated in the syllabus with an appropriate alternative assignment.

G. Protection of Students Against Discrimination and Harassment:

1. **Sexual Misconduct/Sexual Harassment Reporting:** USF (SM) is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence ([USF System Policy 0-004](#)).
2. **Other Types of Discrimination and Harassment:** USF (SM) also is committed to providing an environment free from discrimination and harassment based on race, color, marital status, sex, religion, national origin, disability, age, genetic information, sexual orientation, gender identity and expression, or veteran status ([USF System Policy 0-007](#)).

H. Web Portal Information: Every newly enrolled USF student receives an official USF e-mail account. Students receive official USF correspondence and Canvas course information via that address. The web portal is accessed at <http://my.usf.edu>.

GENERAL INSTRUCTION FOR STUDENTS:

A. Academic Support Services:

[The Information Commons](#) provides students with individual and group study spaces, computers, printers, and various media equipment for temporary use. The Information Commons is staffed by librarians, learning support faculty, tutors, and technology and e-learning specialists. Students challenged by the rigors of academic writing, mathematics, or other course content are urged to contact their professors early in the semester to chart out a plan for academic success, and/or regularly use the tutoring services provided by Learning Support Services ([http://www.USF\(SM\).edu/academic/academic-resources/information-commons/tutoring.aspx](http://www.USF(SM).edu/academic/academic-resources/information-commons/tutoring.aspx)) which are provided at no cost to students.

B. Career Success Center:

Students can explore careers through activities such as job shadowing, mentoring, and internships. Whether students will be pursuing graduate school or seeking employment, Career Services can help develop a plan to reach their next destination. Students can prepare professional documents, practice for the interview and attend employer or graduate school information sessions. Access these resources or schedule an appointment with career advisors at www.USF.edu/career-services.

End of Semester Student Evaluations:

All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Turnitin.com:

In this course, turnitin.com MAY be utilized. Turnitin is an automated system which instructors may use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. Accordingly, you will be expected to submit all assignments in electronic format. After the assignment is processed, as instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process visit <http://www.turnitin.com>. Assessments are due at turnitin.com the same day as in class.

XII. Learning Support: Sarasota-Manatee Campus

Counseling and Wellness Center

The Counseling and Wellness Center is a confidential resource where you can talk about incidents of discrimination and harassment, including sexual harassment, gender-based crimes, sexual assault, stalking, and domestic/relationship violence. Call 941-487-4254

The Counseling and Wellness Center is a **confidential** resource where you can talk about incidents of discrimination and harassment, including sexual harassment, gender-based crimes, sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the Office of Student Rights and Responsibilities (OSSR) or the Office of Diversity, Inclusion, and Equal Opportunity (DIEO), unless you request that they make a report.

Please be aware that in compliance with Title IX and under the USF System Policy, educators **must** report incidents of discrimination and harassment, including sexual harassment, gender-based crimes, sexual assault, stalking, and domestic/relationship violence. If a student discloses any of these situations in class, in papers, or to a faculty member personally, he or she is required to report it to OSSR or DIEO for investigation. Students who are victims or who have knowledge of such discrimination or harassment are encouraged to report it to either OSSR or DIEO. The Deputy Coordinator for USF (SM) is Allison Dinsmore, Coordinator of Students Accessibility Services & Student Advocacy, 941-359-4714 or adinsmore1@sar.usf.edu.

Campus Resources:

Counseling Center and Wellness Center 941-487-4254

Victim Advocate (24/7) 941-504-8599

List of off-campus resources:

HOPE Family Services: 941-755-6805

Safe Place & Rape Crisis Center (SPARCC) – Sarasota: 941-365-1976

Centerstone: 941-782-4800; 24-hr Hotline 941-708-6059

Victim Advocate

A Victim Advocate is available 24/7 by calling (941) 504-8599. For assistance leave a message with your phone number and your call will be returned as soon as possible. The Victim Advocate is available to assist victims of crime, sexual assault, and partner violence.

XIII. Important Dates to Remember

All the dates related to the course, including and especially the assignments are posted on Canvas. Please to note that the schedule appearing in this document and the dates placed on Canvas are tentative. While every attempt is made to hold on to the initial dates posted, they CAN be changed at the discretion of the professor. In terms of the overall

University dates, please be sure to get the newest dates from the Registrar:
<https://www.usf.edu/registrar/calendars/>

End of Syllabus