

## **Synthesis 100: Digitally Documenting Climatic Change**

**SYN 100: TU/TH 11:00-12:20 @ TM102**

**Discussion section Fridays 9:00-9:50 @ HSS 7077**

### **Course Description:**

SYN 100 is a project-based course that builds upon foundational skills by taking a collaborative, interdisciplinary approach to complex global problems. Each section will focus on a different theme, challenge, or question, but will empower students to learn through a group project that deals with complex and intersecting global challenges. SYN 100 is the third course in the Synthesis program's three-course sequence.

This course is structured in a unique way and it may not seem like any of your other classes. SYN 100 is a group project-based course, which means that your learning will happen through your own exploration of real-world challenges, problems, and questions. In this class:

<b>DON'T</b>	<b>DO</b>
Expect to only work independently	Expect to work collaboratively with your group
Expect to be told exactly what to learn	Expect your instructor and TA to mentor and guide your learning
Expect to focus on a narrow topic	Expect to work with your team to discover and apply resources, knowledge, and skill sets from all different disciplines
Expect that your instructor or TA has all the answers	Expect to work collaboratively with your team to figure out problems and work through roadblocks
Expect to be told what project to do	Expect to develop and complete a project that stems from your team's collective knowledge, interests, and/or skills

### **Section Description:**

Each SYN 100 section focuses on a different theme, challenge, or question relevant to the broader concept of "a changing planet". In this section, students will work in cross-disciplinary

groups to design projects around the problem of digital documentation of climatically endangered sites.

In particular, climatically endangered natural and cultural heritage sites are disappearing at a rapid pace. Their digital documentation can both preserve our knowledge of their current state but also serve as a tool for education and communication on climatic change to a broad audience. A special emphasis of the class will be on utilizing VR/AR, photogrammetry, GIS, and gaming engines as platforms of digital documentation and dissemination. You will develop through this class skills in modern software tools such as the Unreal Engine 5, ArcGIS, and Reality Capture. The course is open to all majors and will introduce students to the topics and related tools mentioned above.

### **Anti-Racist and Universal Learning Framework:**

The Synthesis Program commits to providing an equitable, inclusive and accessible learning environment for all. Students in Seventh College come from a variety of perspectives and experiences. There will be a range of beliefs around the different course topics. Throughout your time in the Synthesis Program we ask you to question your own and the positionalities and biases of others to create critical awareness of systematic racism in relation to the climate crisis and intersectional challenges. Some of the materials and conversations may be difficult at times. We aim to create an environment with mutual respect and the ability to listen even when we disagree or feel discomfort.

We also want the Synthesis Program to be a supportive learning environment taking into account that not everyone learns in the same manner. Specifically, we emphasize that there is no wrong or right way to engage with the course material.

Finally, students with particular learning concerns should reach out to the [Office for Students with Disabilities](#) for assistance as well as you can speak with your IA or the Director of the Synthesis Program.

### **Learning Outcomes:**

Through the activities and assignments, this course will help you to:

#### **Design and complete a team project relevant to “a changing planet” theme**

- Identify existing problems, challenges, or questions related to the climate crisis within your course’s topic.
- Articulate how those problems, challenges, or questions have been influenced by structural, historic, and/or systemic inequities.

- Collaborate with team members, TAs, and instructors to create and execute a project that addresses a specific problem, challenge, or question related to your section's theme.
  - Develop a project plan and timeline, including identifying resources required
  - Collaborate with team members, TAs, and instructors to co-create project expectations, goals, and outcomes
  - Integrate knowledge, skills, and concepts from different disciplines to apply to your project
  - Drive your own learning through independent and collaborative research practices
- Create a final project deliverable to showcase your work to peers and other members of the community.

### **Effectively collaborate in a team**

- Recognize teamwork best-practices and identify one's own personal strengths/weaknesses that can be leveraged in your team
- Understand how identity can shape one's approach to and experience with teamwork; apply this knowledge to create safe, meaningful learning environments for all team members
- Practice and apply conflict-resolution skills

### **Reflect on learning environment of the Synthesis Program and actively participate in opportunities to co-create learning experiences**

- Define project-based learning and articulate why it is an effective way to learn
- Reflect on how learning goals and course structure connect with broader Seventh College goals
- Use the framework of collaborative grading to explore what motivates learning, particularly in the context of team-based projects

### **Course Texts & Materials**

All class-wide readings and materials for SYN 100 will be available on Canvas. As your team will be responsible for the direction of your project, you are expected to identify additional appropriate readings and resources on your own as needed.

### **Course Instructional Sessions (Weeks 1-3)**

During the first three weeks of class we will have instructional sessions focused around the topic of documenting climatic change. These sessions are meant to be participatory fielded with questions for us to discuss as a class.

### **Group Focused Computer Work (Weeks 4-9)**

The remaining weeks of the course, after your groups have been formed, we will continue to meet in class to do focused work on your project. As a core part of each project will be using the computer aided tools (e.g. UE5, ArcGIS), this will be a time the Instructor and fellow students will be able to help each other on the projects using the course computers or personal laptops. As you will be expected to primarily work on the project outside of the class this short time should be focused on coordination with your team, helping others or getting help with your project.

### **Group Progress Reports/Brainstorming**

Periodically through the course we will devote the entire class time to letting each group report on their project's progress. This is a time for groups to learn from the other groups, brainstorm new ideas they may want to incorporate into their project, and give/receive outside perspectives that are constructive to their project.

### **Course Tutorials**

The best way to develop a new skill is practice. During the first four weeks of class you will have four tutorials linked with the class sessions to help you develop skills in the digital tools you will employ in the team projects. The tutorials will not be graded but are expected to be completed and submitted the following Tuesday from assignment. Help from your fellow classmates is encouraged. The tutorials will also include additional links to further your understanding which you may choose to incorporate into your personal goals set with the instructor and TA.

### **Final Group Presentations (Week 10)**

During Week 10 Tu/Th groups will take turns presenting the final results they achieved in their project. Each group will have ~30 minutes to present. Presentations may include having the other students play/watch/experience the digital project. Throughout the course we will discuss the topic of public dissemination and how to employ it in a classroom setting. Each group will have the freedom to develop the final method they will use to present their project to the class.

### **Collaborative Grading**

One of the first questions a student usually asks is, "How will I be graded?" or "How do I get an 'A'?" These questions make sense because up to this point in your education grades may have been the only way you knew you met the expectations of a class or teacher. But what are the limitations of assessing your learning only through the lens of grades?

The instructors in the Synthesis Program will use collaborative grading for this course. What does that mean? You will decide at the beginning of the quarter the grade you want to work for during the quarter. More details about grading can be found on Canvas and will be discussed in class.

It is expected you will submit assignments by the set deadlines. At the end of week 10 your group will commit the last changes to your project to <https://gitlab.nrp-nautilus.io/>. The last submission deadline will be for your Final Individual Reflections due Tuesday, finals week.

## **Academic Integrity**

We designed the Synthesis Curriculum and SYN 100 to provide the unique opportunity for you to drive your own learning, and we therefore expect you to produce your own work.

### [UCSD statement on academic integrity](#)

To uphold academic integrity, students shall:

- Complete and submit academic work that is their own and that is an honest and fair representation of their knowledge and abilities at the time of submission.
- Know and follow the standards of the class and the institution.

Thus, no student shall engage in an activity that undermines academic integrity or facilitates academic integrity violations by others. This includes, but is not limited to, the following behaviors:

- A. No student shall procure, provide, or accept any material that contains questions or answers to any examination or assignment unless the student's possession of the material has been authorized by the instructor.
- B. No student shall complete, in part or in total, any academic work (e.g., examination, assignment, paper) or obtain academic credit (e.g., attendance, participation) for another person.
- C. No student shall allow any academic work or academic credit to be completed or obtained, in part or in whole, for themselves by another person.
- D. No student shall plagiarize or copy the work of others and submit it as their own work.
- E. No student shall employ aids in undertaking course work or in completing any exam or assignment that are not authorized by the instructor.
- F. No student shall alter graded class assignments or examinations and then resubmit them for regrading without the instructor's permission.
- G. No student shall submit substantially the same material more than once without prior authorization from the instructor, such as a paper that was written and submitted in another class.

If you find that your personal circumstances challenge your ability to uphold this level of academic integrity, please speak with your instructional assistant or the Director of the Synthesis Program. Any work submitted that fails to meet these responsibilities will be in violation of your grading contract, and you will be subject to a lower grade and possible failure of the course. The Synthesis Program may also forward any suspected work to the Office of

Academic Integrity for further review which may result in additional academic sanctions, probation and/or suspension.

### **Posting materials online**

Any materials posted on Canvas or in class Google docs are the copyright of the faculty and instructors in the Synthesis Program and therefore should not be shared outside of Canvas on such sites as Course Hero.

Recordings of class sessions are to be shared only with members of the class and should be deleted by the end of the quarter.

## Schedule

Week of	Week #	Day	Topic/Activity	Due at Meeting Time
Sept 26	1	Tue	Course & Project Introduction	
		Thr	Introduction to Unreal Engine 5 and its uses for digital documentation and education	
		Fri	The Good, The Bad, and The Ugly of Groupwork	
Oct 3	2	Tue	Modern Techniques in Digitization, Mapping, Visualization	[Tutorial 1: Intro to UE5]
		Thr	Topics of Climatic Crises in California we can address: Salton Sea, Anza-Borrego, Wild Fires	
		Fri	Conflict-Resolution in Teams	Teamwork Resume Collaborative Grading Reflection
Oct 10	3	Mon		Team Preferences due at 9AM
		Tue	Teams Assigned Game development, working as a team and how to realize your UE5 project	[Tutorial 2: Digitization and VR in UE5]

		Thr	Marshmallow Challenge, Class Brainstorming and Project Synthesis and Coordination	[Tutorial 3: Learning Gitlab and Harnessing Nautilus Kubernetes]
		Fri	Equitable Teamwork Charter	Watch <a href="#">video</a> on unconscious bias in team
Oct 17	4	Tue	Class Brainstorming and Project Synthesis and Coordination	[Tutorial 4: Intro to GIS and integration with UE5]
		Thr	Group Progress Reports/Brainstorming	
		Fri	Project Plan & Timeline (draft)	
Oct 24	5	Tue	Group Focused Computer Work Individual Conferences during class	
		Thr	Group Focused Computer Work Individual Conferences during class	
		Fri		Final Project Plan & Timeline
Oct 31	6	Tue	Group Progress Reports/Brainstorming	Midterm Reflection
		Thr	Group Focused Computer Work	
		Fri		
Nov 7	7	Tue	Group Focused Computer Work	
		Thr	Group Progress Reports/Brainstorming	
		Fri	No Class (Veterans Day)	



Nov 14	8	Tue	Group Focused Computer Work	
		Thr	Group Focused Computer Work	
		Fri		
Nov 21	9	Tue	Group Focused Computer Work	Final Team Conferences (Schedule with Instructor)
		Thr	No Class (Fall Break)	
		Fri	No Class (Fall Break)	
Nov 28	10	Tue	Group Presentations	Final Individual Conferences (Schedule with Instructor)
		Thr	Group Presentations	
		Fri		Digital Archive Submission Final Project Commits
Dec 5	Finals	Tue		Final Individual Reflections

### **Assignment & Activity Details**

Assignment Name	Due Date	Description
Tutorials	Tuesday of Following Week	See above. Tutorials are individually submitted to Canvas.
Collaborative Grading Reflection	Week 2, Tuesday 10/4	Review the syllabus, paying specific attention to the learning outcomes. Take some time to reflect on your personal learning goals for this course

		<p>and respond to the following questions in at least 400 words:</p> <ol style="list-style-type: none"> <li>1. What goals do you have for your</li> <li>2. In this class, how will you apply and build on your experiences and interests you've developed in your major and other classes?</li> <li>3. How will you work with your group to help you accomplish your goals? What skills do you bring and what areas will you need support or input?</li> <li>4. After reading over the collaborative grading guidelines, how will you assess your learning this quarter? Feel free to state if one of your learning goals is to work toward a particular grade. Circumstances change during a quarter, so you can revise your learning goals including your grade with the midterm reflection and the final conference.</li> </ol>
Teamwork Resume	Week 2, Friday 10/7	Your instructor and TA will work together to determine team assignments for the quarter, however you will have some input. By the Friday of Week 2 (10/7), you will craft a brief resume that highlights your skills, interests, schedule, and goals for the course. You will review the resumes of all your classmates and submit the names of 4 people you would like to work with, and 1 person you would prefer not to work with. Your submissions will be due by the Monday of Week 3 (10/10). Your instructor and TA will take those recommendations into account and make the final decision regarding teams.
Project Plan & Timeline	Week 5, Friday 10/28	You will work collaboratively with your team, TA, and instructor to complete a project plan which will include your overall goal for the project, your interim goals, as well as a timeline to executing your project. You will work on a draft during your discussion session during Week 4 and a final version will be due at the end of Week 5.
Midterm Reflection	Week 6, Tuesday	Following your conference, reflect on the conversation you had with your

	11/1	<p>instructor. In at least 250 words, respond to the following questions. You do NOT need to respond to every question, but use them as an opportunity to reflect on your progress so far, and your goals for the remaining 5 weeks.</p> <ul style="list-style-type: none"> <li>• What have you learned about your thinking and teamwork processes?</li> <li>• Is there a moment of frustration or challenge you worked through? How will this learning inform the second half of the quarter?</li> <li>• How have you participated in class? If you feel this is an area where you can improve, is there a particular goal you wish to set? What does participation look like to you and how can you communicate your goals to your instructor and TA?</li> <li>• How would you assess your labor in this class? What motivates you?</li> <li>• What have you appreciated most about the quarter so far and how has it informed your learning?</li> <li>• How do you want to push yourself during the second part of the quarter?</li> <li>• This course provides you with opportunities to take ownership over your learning. How have you taken up these opportunities, if at all? What do these opportunities mean for your learning if you have or have not accepted this agency?</li> </ul>
Final Project	Week 10, Friday 12/2	<p>You will submit the materials for your final project by the end of Week 10. Final project structure and format may vary depending on team. Each team should be sure they discuss expectations and goals with their TA and instructor throughout the quarter.</p>