

**WxChallenge Forecasting Seminar
EAS 4801/8801 (1 Credit Hour)
Fall 2022**

Course Meeting Times: 11:00 – 11:50 AM Fridays
Course Meeting Location: L1118 ES&T

Instructor: Dr. Zachary Handlos
Office: 1251 Ford ES&T Building
Office Hours: 12-2 PM EDT Mondays and Wednesdays or via appointment (in-person or virtual)
Email: zachary.handlos@eas.gatech.edu

*****Statement about Wearing Masks*****

You are **strongly encouraged** to wear a mask within campus buildings **regardless of your vaccination status.**

*****COVID-19 Statement*****

The best way to protect yourself from COVID-19 is to get vaccinated; more information about vaccination opportunities on campus can be found here:
<https://health.gatech.edu/coronavirus/vaccine>

If you are experiencing a fever (i.e., temperature over 100°F), cold-like symptoms, sore throat, dry cough, flu or any other type of illness, **DO NOT COME TO CLASS IN-PERSON.** Please inform the course instructor ASAP if you will miss class due to illness.

COVID-19 campus guidelines: <http://health.gatech.edu/coronavirus/campus-guidelines>

Course Overview

The goal of this seminar is to provide an opportunity for Georgia Tech’s weather and climate enthusiasts consisting of undergraduate and graduate students, faculty, and staff to meet weekly to discuss weather forecast techniques and strategies. You and another colleague will be asked to lead one or more weather discussion(s) centered on the WxChallenge competition’s forecast city. If you are not presenting during a class period, you will be expected to provide feedback for the presenters and/or actively participate in the weather discussion. Guest speakers may also be visiting throughout the semester to provide their weather analysis and forecasting expertise. We will also be discussing forecasting techniques and strategies throughout the semester to put our forecasting team in the best position for success within the WxChallenge competition.

Forecasting Topics That May Be Discussed (depending on forecast cities!)

- Forecast Methods
- Persistence, Climatology, NWP, Statistical–Dynamical Techniques: MOS
- Numerical Weather Prediction, Numerical Methods, Model Parameterizations
- Deterministic vs Probabilistic forecasts
- Ensembles
- Forecast Uncertainty, Atmospheric Predictability
- Temperature Forecasts; Diurnal cycle, High and Low Temps
- Wind Forecasts
- Winter Precipitation Forecasts; Snowfall, precipitation type
- Cold air damming
- Precipitation Forecasting
- Flood and flash flood guidance
- Stratiform vs Convective rainfall
- Convective Initiation and Severe Weather Forecasts
- Deep moist convection, Hail, Wind, Tornadoes
- Hurricane Forecasts
- TC genesis, intensification and track movement
- Extratropical Cyclones, Jet Stream Meteorology, Jet Superposition Events
- Fire Forecasts
- Boundary layer height, mixing, and evolution
- Soil/fuel moisture, Surface winds and variability
- Intraseasonal Forecasts
- MJO, Atmospheric Teleconnections
- ENSO, Arctic Sea Ice, U.S. Temperatures and Precipitation

Grading

This is a pass/fail course. In order to pass this class, you are required to successfully accomplish the items listed below; **you must complete all items below to pass the course:**

1. Participate in the WxChallenge national forecasting competition and miss no more than 4 total forecasts
2. Exhibit proficiency in your weather discussion(s)
3. **Actively** participate (e.g., completing any training modules, asking questions, providing relevant commentary, actively listening to your peers, etc...)
4. Complete forecasting reflection worksheet assignments on time for all forecast cities during Fall semester

Access and Accommodations:

If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Office of Disability Services to explore reasonable accommodations.

The Office of Disability Services can be contacted by:

Phone: **404-894-2563**

Email: dsinfo@gatech.edu

Website: <https://disabilityservices.gatech.edu/>

Resources:

Academic Support

- [Center for Academic Success](#)
 - [1-to-1 tutoring](#)
 - [Peer-Led Undergraduate Study \(PLUS\)](#)
 - [Academic coaching](#)
- Residence Life's [Learning Assistance Program](#)
- [OMED Educational Services](#) - Group study sessions and tutoring programs
- [Communication Center](#) - Individualized help with writing and multimedia projects
- [Academic advisors](#) for your major

Personal Support

Georgia Tech Resources

- The [Office of the Dean of Students](#) | **404-894-6367** | 2nd floor, Smithgall Student Services Building; You also may request assistance [here](#)
- [Counseling Center](#) | **404-894-2575** | Smithgall Student Services Building 2nd floor
 - Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention.
 - *Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2204.*
- [Students' Temporary Assistance and Resources \(STAR\)](#)
 - Can assist with interview clothing, food, and housing needs.
- [Stamps Health Services](#) | **404-894-1420**
- [OMED Educational Services](#) | **404-894-3959**
- [Women's Resource Center](#) | **404-385-0230**
- [LGBTQIA Resource Center](#) | **404 385 4780**
- [Veteran's Resource Center](#) | **404-385-2067**
- [Georgia Tech Police](#) | **404-894-2500**

National Resources

- The [National Suicide Prevention Lifeline](#) | 1-800-273-8255
 - Free and confidential support 24/7 to those in suicidal or emotional distress
- The [Trevor Project](#)
 - Crisis intervention and suicide prevention support to members of the LGBTQ+ community and their friends
 - Telephone | **1-866-488-7386** | 24 hours a day, 7 days a week
 - [Online chat](#) | 24 hours a day, 7 days a week
 - Text message | Text "START" to **687687** | 24hrs day, 7 days a week

List of Course Topics*

Week	Class Topic/Activity	Forecast City
Week 1 (8/26/22)	WxChallenge Introduction; Where to find weather data	N/A
Week 2 (9/2/22)	Where to find weather data; how to find and interpret METAR data	N/A
Week 3 (9/9/22)	Forecasting methods; Introduction to NWP	N/A
Week 4 (9/16/22)	NWP	N/A
Week 5 (9/23/22)	Preparing for WxChallenge	N/A
Week 6 (9/30/22)	WxDiscussion; Check in about first week of forecasting	Forecast City #1
Week 7 (10/7/22)	Guest Speaker #1	Forecast City #1
Week 8 (10/14/22)	Student-Led WxDiscussion	Forecast City #2
Week 9 (10/21/22)	Guest Speaker #2	Forecast City #2
Week 10 (10/28/22)	Student-Led WxDiscussion	Forecast City #3
Week 11 (11/4/22)	Student-Led WxDiscussion	Forecast City #3
Week 12 (11/11/22)	Student-Led WxDiscussion	Forecast City #4
Week 13 (11/18/22)	Student-Led WxDiscussion	Forecast City #4
Week 14 (11/25/22)	THANKSGIVING BREAK	NO WXCHALLENGE FORECASTING
Week 15 (12/2/22)	TBD	Forecast City #5

*Course topics subject to change