The following courses for Spring 2020 will be taught by SAFL-affiliated faculty:

**Department of Civil, Environmental, and Geo-Engineering**

**CEGE 3103: Engineering Ethics and Professional Practice**
**Instructor:** Vaughan Voller  
**Days/Time:** T 8:40 – 9:30 AM  
**Location:** CE Building 221  
**Description:** Introduction to ethical thinking, legal aspects of professional practice, codes of ethics for engineers, ethical problem-solving using case studies.

**CEGE 3502 (w/lab) or CEGE 4522 (w/o lab): Introduction to Fluid Mechanics**  
**Instructor:** Michele Guala  
**Days/Time:** TT 11:15 am – 12:30 pm  
**Location:** CE Building 210  

**CEGE 4501: Hydrologic Design (w/Discussion period)**  
**Instructor:** Xue Feng  
**Days/Time:** MW 4:00 – 5:15 pm  
**Location:** CE Building 210  
**Description:** Hydrologic cycle: precipitation, evaporation, infiltration runoff. Flood routing through rivers and reservoirs. Statistical analysis of hydrologic data and estimation of design flows. Open channel flow, flow through conduits. Detention basin design, hydraulic structure sizing, estimation of risk of flooding.

**CEGE 4512: Open Channel Hydraulics**  
**Instructor:** Omid Mohsemi  
**Days/Time:** MW 4:40 – 6:35 pm  
**Location:** CE Building 205  
**Description:** Theories of flow in open channels, including gradually varied and rapidly varied flows, steady and unsteady flows. Computational methods for unsteady open channel flows, applications to flood routing. Introduction to moveable bed mechanics.

**CEGE 8503: Environmental Mass Transport**  
**Instructor:** Kimberly Hill  
**Days/Time:** TTh 10:10 am – 12:05 pm  
**Location:** Vincent Hall 20  
**Description:** Principles of intraphase and interfacial chemical transport and fate in the environment, specifically the processes of diffusion, dispersion, and convection. Application to surface water and atmospheric mixing, dispersion in groundwater, and transport between these media.

**CEGE 8503: Stochastic Hydrology**  
**Instructor:** Ardeshir Ebtehaj  
**Days/Time:** MW 1:00 – 2:55 pm  
**Location:** CE Building 205  
**Description:** Analysis and synthesis of hydrologic series and systems; derived distributions; uncertainty and risk analysis; flood frequency analysis; multivariate time series analysis; correlation and spectral analysis; series of long-range dependence; linear estimation; geostatistics; sampling networks; hydrologic forecasting.
Department of Earth and Environmental Sciences

**ESCI 4602: Sediment and Stratigraphy**  
**Instructor:** Chris Paola  
**Days/Time:** MW 11:15 am – 12:05 pm  
**Location:** Tate Hall 120  
**Description:** Interpretation of origin of sedimentary rocks through application of basic physical/chemical principles. Modern depositional environments, petrographic microscopy, basin dynamics, stratigraphy.

**ESCI 4702: General Hydrogeology**  
**Instructor:** Peter Kang  
**Days/Time:** TTh 1:00 – 2:15 pm  
**Location:** Tate Hall 120  

Department of Mechanical Engineering

**ME 4331: Thermal Energy Engineering Laboratory (w/lab)**  
**Instructor:** Jiarong Hong  
**Days/Time:** TTh 10:10 – 11:00 am  
**Location:** ME 221  
**Description:** Measurement/analysis of heat transfer in single phase, multiphase, reacting environments. Experimental measurements relevant to thermal/fluid systems, statistical design of experiments/uncertainty analysis. Heat exchange.

**ME 8332: Advanced Fluid Dynamics**  
**Instructor:** Lian Shen  
**Days/Time:** MF 10:30 – 11:45 am  
**Location:** ME 321  
**Description:** Advanced fluid dynamics course addressing the theory and applications of fluid flows pertinent to mechanical engineering. The course focuses on the physical phenomena, mathematical formulations, and advanced problem-solving techniques for flows ranging from microscale flows to turbulence, with examples from mechanical engineering practice. Prerequisite an intermediate fluid mechanics course or permission of instructor.

Department of Aerospace Engineering and Mechanics

**AEM 4203: Aerospace Propulsion**  
**Instructor:** Filippo Coletti  
**Days/Time:** TTh 12:20 – 2:15 pm  
**Location:** Nicholson Hall 275  
**Description:** Basic one-dimensional flows: isentropic, area change, heat addition. Overall performance characteristics of propellers, ramjets, turbojets, turbofans, rockets. Performance analysis of inlets, exhaust nozzles, compressors, burners, and turbines. Rocket flight performance, single-/multi-stage chemical rockets, liquid/solid propellants.

**AEM 8233: Multi-phase Flows**  
**Instructor:** Filippo Coletti  
**Days/Time:** TTh 8:15 – 9:30 AM  
**Location:** Ackerman Hall 317  
**Description:** Introduction to fluid flows with multiple interacting phases, with emphasis on cases in which a dispersed phase is carried by a continuous one. Droplet dynamics, bubbly flows and bubble-induced fluctuations, particle-turbulence interaction. Fundamentals of measurement techniques and modeling approaches. Elements of rheology for complex and active fluids.