

## APPLIED DATA SCIENCE & ANALYTICS IN HUMAN PERFORMANCE

PET 5936 -- 3 -- FALL 2021

**INSTRUCTOR:**

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Preferred Method of Contact: Canvas Messaging

Preferred pronouns: she/her

**OFFICE HOURS:**

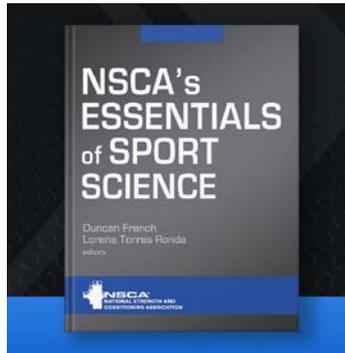
Virtual; details posted on Canvas.

**MEETING TIME/LOCATION:** Access course through Canvas on UF e-Learning (<https://elearning.ufl.edu/>) AND the Canvas mobile app by Instructure. This is a fully online course, so there are no in-person meetings. Lectures are pre-recorded so that you may watch them on-demand; please refer to the “Course Schedule” below for the suggested timeline to follow.

**COURSE DESCRIPTION:** Examines fundamental concepts related to the acquisition, analysis, and interpretation of data relevant to the outcome of human performance across myriad physical and cognitive domains including sport, exercise, tactical operations, and medical professions. Addresses the use of statistics and broader fields of data science, artificial intelligence, analytics, and technology management necessary to evaluate performance and strategically adjust training methods to enhance human performance, health, and well-being. Content will aid students preparing to sit for the National Strength and Conditioning (NSCA) Certified Performance and Sport Scientist (CPSS) exam.

**PREREQUISITE KNOWLEDGE AND SKILLS:** Undergraduate degree. Some background in math and science. Introductory statistics is not required but is helpful. Students enrolling in this course must have sufficient technical skills access and navigate the Canvas learning management system, e-mail with attachments, Microsoft Office, Zoom videoconferencing, downloading, installing, and updating software to Google Chrome (i.e. Honorlock).

**MATERIALS:** Textbook: French, D. and Ronda, L.T. (Eds). NSCA's Essentials of Sport Science. Human Kinetics. 2022. ISBN: 9781492593355



Additional readings, such as research articles, will be provided to you through Canvas. Access to the internet, a computer with functioning webcam, microphone, and speaker (or headphones/earbuds) are required. Please refer to “UF Computing Requirements” below for additional information on this. All additional material will be provided online through Canvas.

**COURSE FORMAT:** This class is 100% online. Pre-recorded lectures and assigned readings are organized within modules. The class is designed to be flexible to your schedule. Assignments are due throughout the semester, with at least one work week to complete each. There are four midterm examinations and one “artificial intelligence (AI) project”.

**COURSE LEARNING OBJECTIVES:** Upon completion of this course, students will be able to:

1. Identify the aspects of sports improved with technological implementation
2. Describe principles of good data hygiene
3. Explain the characteristics of tracking and load monitoring systems
4. Describe the protocols used to collect data with relevant sport science technology
5. Analyze data collected with relevant sport science technology
6. Interpret the results of data analyzed from relevant sport science technology
7. Recommend strategies to improve athlete health, well-being, or performance based on the interpretation of data analyses.
8. Develop material to disseminate data analyses and subsequent recommendation

## COURSE AND UNIVERSITY POLICIES:

**UF STUDENT COMPUTING REQUIREMENTS:** Since this course is fully online, and per the UF student computing requirements, UF does not recommend students relying

on/regularly using tablet devices, mobile phones, or Chromebook devices as their primary computer, as these may not be compatible with specific platforms used in this course or other UF courses (<https://it.ufl.edu/policies/student-computing-requirements/>). Access to a fast, secure internet network will be necessary for this course. If a student is in an area with limited internet access, UF students can access eduroam for free with their GatorLink log-in credentials. If you have any problems connecting to eduroam, you can contact the UF Computing Help Desk.

There are more than 100 Wi-Fi hotspots in Florida, including several state university campuses and community colleges. You may connect to eduroam in other states as well. You don't have to sit in a car: many locations have open spaces and communal rooms available so you can get online while socially distancing and following CDC guidelines in an air-conditioned space. In Florida, all UF/IFAS Research and Education Centers (REC) are equipped with eduroam, so if you live in a rural area of your county, you can visit an REC to securely watch course videos and take care of your academic needs.

If you have any problems connecting to eduroam you can call (352-392-HELP/4357) or [email](#) the UF Computing Help Desk.

**ATTENDANCE POLICY:** As an asynchronous online course, there is no specific attendance policy. However, midterm exams must be completed within the designated assessment time and assignments must be submitted by posted deadlines. Elaborated requirements for class attendance (participation) and make-up exams, assignments, and other work in this course are consistent with university policies <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

**PERSONAL CONDUCT POLICY:** Students are expected to exhibit behaviors that reflect highly upon themselves and our University:

- Read and refer to the syllabus.
- Arrive to live sessions (i.e. scheduled office hours), if applicable, on time.
- Follow the guidelines for appropriate behavior in virtual environments (i.e. name visible, non-offensive background (whether virtual or not), appropriate dress during live sessions).
- Submit assignments by the deadlines. If you miss a deadline, please recognize that requesting an exception is unfair to your classmates and instructor.
- Show respect for the course instructor and classmates in engagement.
- Use professional, courteous standards for any web exchanges (i.e. proper greetings and titles in emails).
- UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither

given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions.

- You are obliged to report any condition that facilitates academic misconduct to appropriate personnel.

The use of software to promote academic integrity through plagiarism detection is advocated for. Although not required, Turnitin is an excellent resource for this and reference/citation assistance.

**MAKE-UP POLICY:** Unless excused based on University policies (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>), missed examinations and non-submitted or late assignments will not be evaluated and will be assigned a grade of 0.

Obtaining approval for make-up exams or make-up assignments is the responsibility of the student. Students with medically or emergency related circumstances should utilize the UF Care Team’s Contact My Instructor service (<https://care.dso.ufl.edu/instructornotifications/>) provided by the UF Dean of Students Office. Any non-medical or emergency related circumstances require students to submit a written request explaining why an exception is being requested. The written request must include official documentation that provides proof that the missed coursework was due to acceptable reasons outlined by University policy.

To request and possibly schedule a make-up quiz or exam (with valid explanation), please contact me and provide relevant information, including documentation. Requests should be made in advance, sooner than 1-2 days the original deadline. Ideally, make-ups should be completed before the next assignment deadline.

Unexcused (including “inappropriate excuses”) material cannot be made up, and will result in a zero on that item. Please do **not** ask for an accommodation for inappropriate excuses, which include:

- Extracurricular activities
- Out of town/vacation
- Sleeping in
- Sports
- Technological issue due to procrastinated assignment upload
- Volunteering
- Work

**HONORLOCK SYSTEM REQUIREMENTS (ASSESSMENT PROCTORING):** Exams will be proctored using HonorLock. You will not need to sign-up or schedule a testing time, nor

will you need to create an account. To ensure your device is compliant with HonorLock, a series of pre-assessment checks must be performed before gaining access to the exam. Please do so in advance of the exam; we are unable to further accommodate for individual technological issues that may detract from your exam time. Specifications necessary for HonorLock to work are listed below:

- **Considerations for using Honorlock:**
  - You need to open Canvas on the **Google Chrome internet browser** and to download the *HonorLock Chrome Extension*. Other internet browsers will **not** be compatible with HonorLock. You must use a PC or Mac.
  - Make sure you have a stable Internet connection wherever you are taking the exam (i.e. good Wi-Fi).
  - Students must install the *HonorLock Extension* within Chrome
  - HonorLock will not support Windows 8, Windows 8.1, Mac OSX 10.11 and Mac OSX 10.12. You can find the updated *Minimum System Requirements* and a system compatibility test at [www.honorlock.com/support](http://www.honorlock.com/support).
  - You will need to take the exam on a desktop computer or laptop with a webcam and microphone set up on your chosen device. This will not work on mobile devices or tablets, including iPads and smart phones.
  - You need to make sure that the **camera is facing YOU at all times** – if the camera does not stay facing you or if you are out of frame, the exam will pause, preventing you from continuing, even midway through.
  - A 360-degree scan of your testing room/environment will be required. If you are using a laptop, you will need to pick up your laptop and rotate it for the room scan, including your examination surface (i.e. desk, table), floor space, your lap, etc. The testing environment should be cleared of any clutter, no notes, or textbooks laying out. These could constitute a violation of the Honor Code (i.e. academic dishonesty).
  - Make sure the room you are taking the exam in is well-lit and that you are by yourself. Rooms that are not bright enough may get flagged as “blurry” or “unclear”. Avoid posters or photographs on the wall behind you; try to minimize noise (i.e. talking aloud). These will also flag your exam, which will be reviewed by a member of the instructor team for the course to confirm or refute any academic dishonesty.
  - You must have a valid and clear photo identification (ID) card (Gator ID, driver’s license, passport) to show at the start of the exam. Make sure the image is clear.
  - Only one screen (i.e. cannot have multiple monitors) and one tab (i.e. the tab that is being used for the exam) in Chrome is allowed. HonorLock has an integrity algorithm that can detect search-engine use, so do not attempt to search for answers, even if it is on a secondary device.

- An HonorLock Practice Quiz will be set up under Quizzes in Canvas. **Please go through this practice test well in-advance of taking the exam.** This practice quiz allows you to go through all the pre-assessment checks so you will know what to expect when taking the exam itself. Take the practice quiz on the device you intend to take the exam on, in the same environment (building, room, etc).
- **Failure to meet the items above may result in a 0 grade.** If you encounter any issues with the testing platform or the exam, you should immediately contact HonorLock for assistance. If this fails, you need to email your course instructor right away with specific details (i.e. screenshots of your chat conversation with HonorLock with time stamps) of what occurred so that they can assist you as quickly as possible.

**INCLUSION, DIVERSITY, EQUITY, AND ACCESS (IDEA):** All individuals, irrespective of their gender, gender identity, gender expression, sexual identity, sexual orientation, race, ethnicity, religious affiliation, physical or mental ability, political affiliation, or any other perceived generalized differentiator, are welcome in this course. It is expected that we treat each other with respect and as equals. Treat one another as you want to be treated so that we can have valuable discussions in this course. Intolerant, inflammatory, or insulting behavior or speech is not acceptable and may lead to dismissal from the course. Please do reach out for assistance regarding accommodations – I do not want inaccessibility to keep anyone from the opportunity to learn and grow.

**ACCOMMODATING STUDENTS WITH DISABILITIES:** Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking exams. Accommodations are not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations. Assignments and modules are intentionally accessible from the start of the semester (Day 1) for those who may need more time for completion or who prefer planning out their term in advance. Students registered with the DRC: It is strongly recommended that you submit your accommodation requests through the DRC in the *first week of classes* to ensure that they are approved in time.

In the case of situations that may impede learning throughout the semester, students may reach out to the Dean of Students Office to provide documentation that will then be directed to the course instructor.

**PREFERRED NAME:** It is important to the learning environment that you feel welcome and safe in this class, and that you are comfortable participating in class discussions and

communicating with me on any issues related to the class. I would like to acknowledge your preferred name, and pronouns that reflect your identity. Please let me know how you would like to be addressed if your name and pronouns are not reflected by your name on the class roster.

You may also change your "Display Name" in Canvas. Canvas uses the "Display Name" as set in myUFL. The Display Name is what you want people to see in the UF Directory, such as "Ally" instead of "Allison." To update your display name, go to [one.ufl.edu](https://one.ufl.edu), click on the dropdown at the top right, and select "Directory Profile." Click "Edit" on the right of the name panel, uncheck "Use my legal name" under "Display Name," update how you wish your name to be displayed, and click "Submit" at the bottom. This change may take up to 24 hours to appear in Canvas. This does not change your legal name for official UF records. Please keep your preferred name (first and last, if possible) visible when engaging in course activities online (i.e. virtual office hours).

**PRIVACY (FERPA):** Aspects of course content may be audio and visually recorded for students in the class to refer back to. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. By enrolling in this course, you will be required to have audio and video enabled for certain activities (i.e. poster presentation). If you do not want your image in any recording pertaining to course content, please let me know within the first couple weeks of class so that we may seek an accommodation. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

**COPYRIGHT STATEMENT:** The materials used in this course are copyrighted. Course content is the intellectual property of Diba Mani, Blain Harrison, Garrett Beatty, and property of the University of Florida. Course content may not be duplicated in any format without explicit permission from the College of and Human Performance and UF. Course content may not be used for any commercial purposes. Individuals violating this policy may be subject to disciplinary action or legal litigation from the University.

**COURSE EVALUATIONS:** Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they

receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>.

## GETTING HELP:

### Health and Wellness

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575
- Counseling and Wellness Center: <https://counseling.ufl.edu/>, 352-392-1575
- Sexual Assault Recovery Services (SARS) - Student Health Care Center, 392-1161
- University Police Department, 392-1111 (or 9-1-1 for emergencies)  
<http://www.police.ufl.edu/>

### Academic Resources

- E-learning technical support, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). <https://lss.at.ufl.edu/help.shtml>
- Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling. <https://career.ufl.edu/>
- Library Support: <https://uflib.ufl.edu/find/ask/> Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>
- Student Complaints
  - On-Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>
  - On-Line Students Complaints: <http://distance.ufl.edu/student-complaint-process/>

## GRADING:

The following table outlines the point-accruing components of the course.

Evaluation Components	Percentage Allocation
Engagement	5%
AI Project Assignments	20%
Quizzes	25%
Exams	50%

**Engagement** – Any graded discussion board posts, peer evaluations, surveys, or other engagement-focused activity will make up this segment of the course grade.

**AI Project Assignments** – In the latter half of the course, you will complete some assignments through *CogUniversity*, an engaging software environment designed specifically for people interacting with machines. Thorough instructions will be provided later in the semester via Canvas. For these assignments, you will work with a large data set and multiple AI applications to solve problems.



**Quizzes** – Each course module includes a multiple choice quiz aimed at guiding and enhancing engagement in learning opportunities.

**Exams** – Exams (2) comprise up to 50 multiple choice, multiple answer, matching, and true/false questions worth 1 point each. Questions will require the application of course material or knowledge of basic scientific principles covered throughout the course. Exam questions are generated by the course instructor and are randomly selected from a test bank. Students should prepare for the exam by completing all weekly course readings, watching all course lectures, consuming all course media, and completing and module quizzes prior to the exam.

- Exam 1: Modules 1-6: 25%
- Final Exam: Modules 1-12: 30%

**GRADING SCALE:** Any discrepancies with points displayed in the gradebook must be brought to the attention of the instructor as soon as possible, or before the last day of class. There is **no** curve for this course and final grades will **not** be rounded up (i.e. 92.99% will **not** be rounded to a 93.00%). Grades of “I”, “X”, “H”, or “N” will not be given except in cases of a documented, catastrophic occurrence. Any requests for additional extra credit or special exceptions to these grading policies will be interpreted as an honor code violation (i.e., asking for preferential treatment) and will be handled accordingly. More detailed information regarding current UF grading policies can be found here: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>.

Letter Grade	Percent of Total Points Associated with Each Letter Grade	GPA Impact of Each Letter Grade
A+*	97.00-100%	4.0
A	93.00-96.99%	4.0
A-	90.00-92.99%	3.7
B+	87.00-89.99%	3.3
B	83.00-86.99%	3.0
B-	80.00-82.99%	2.7

C+	77.00-79.99%	2.3
C	73.00-76.99%	2.0
C-	70.00-72.99%	1.7
D+	67.00-69.99%	1.3
D	60.00-66.99%	1.0
E (F)	0-59.99%	0

\*An A+ appears as an “A” with the UF Registrar

## SUCCESS AND STUDY TIPS:

Recognizing that people learn in different ways and with no judgement on how they study (i.e. highlighting text, using YouTube, drawing figures), here are some tips for success and studying in this course that haven't been proven useful for many:

- Some of the material presented in this class is advanced. However, the course is designed so that if you do the assignments and quizzes, complete your AI project assignments, and complete all the lectures, you will likely earn a good grade.
- The quizzes are open-book and multi-attempt, which you should take advantage of to earn high marks. The midterms are challenging, but their impact on your final grade can be minimized by the higher-valued research project components.
- Concentrate on the material and get as much as you can out of material to prepare yourself for a professional life rather than becoming anxious about a high grade. This is a skills-acquisition class; *not* a “weed out” class. Again, most students who do what is asked of them do very well.
- Look up material that inspires you. If you come across something that connects to class content, share as a Discussion on Canvas. We're lucky to have so many resources through the internet.
- Check Canvas for announcements! Adjustments to the schedule and edits/clarifications to topics discussed in class will be posted there.
- Quizzes and assignments are designed as preparation tools for the course exams. Learning is a process that requires sustained incremental advancements that occur over time following neural adaptation. More simply stated, cramming may yield short-term results, but this strategy does not induce meaningful or lasting learning.
- Assignments are designed to facilitate skill development in retrieving, consuming, and communicating scientific evidence supporting chosen approaches to improve performance by leveraging psychological skills/theory.
- Things happen; that's life. If there are some majorly overwhelming things happening during your semester, send me a message and even schedule a live virtual meeting with me. We'll work together to figure out what steps we should take in hopes of wrapping up successfully wrapping up the course. Swing by and chat academia (i.e. grad school), sports, and aspirations to travel the world some time – I've met some fantastic folks in this class, each with their own stories of success and challenge that have been quite inspiring to hear. 😊

## COURSE SCHEDULE:

Specifics, such as content covered within each module, are available on Canvas. Changes to the schedule will be posted there, as well; please review all announcements for updates. All assignments and assessments are due or close at 11:59 PM EST on the date marked unless otherwise noted or mentioned in Canvas via announcements. Please reach out in advance for accommodations, including special observances (i.e. holidays) – I’m happy to assist however I am able!

Module	Week	Weekday Dates	Topic & Textbook Reading*
	1	Aug 23 - Aug 27	Pre-Survey; Introductions; Textbook Acquisition Period
Module 1	2	Aug 30 - Sept 3	Technology & Data in Human Performance Textbook Chapters 7, 8
Module 2	3	Sept 6 - Sept 10 <i>Sept 6: Labor Day</i>	Athlete Tracking Systems & Load Monitoring Textbook Chpaters: 9, 10
Module 3	4	Sept 13 - Sept 17	Kinematics, Kinetics, Gait Analysis, & Force Platforms Textbook Chapters: 11, 12
Module 4	5	Sept 20 - Sept 24	Strength Tracking & Analysis; Heart Rate & Heart Rate Variability Textbook Chapters: 13, 14
Module 5	6	Sept 27 - Oct 1	EEG, EMG, Biomarkers for Health & Performance Textbook Chapters: 15, 16
Module 6	7	Oct 4 - Oct 8 <i>Oct 8: Homecoming</i>	Perception of Effort & Subjective Monitoring Textbook Chapter: 17
	8	Oct 11 - Oct 15	Midterm Exam
Module 7	9	Oct 18 - Oct 22	Statistical Modeling Textbook Chapter: 17
Module 8	10	Oct 25 - Oct 29	Injury Risk Model Textbook Chapter: 18
Module 9	11	Nov 1 - Nov 5	Performance Interventions & Operationalizing Data Textbook Chapter: 22
Module 10	12	Nov 8 - Nov 12 <i>Nov 11: Veteran's Day</i>	Data Mining & Nonlinear Data Analysis Textbook Chapter: 20
Module 11	13	Nov 15 - Nov 19	Data Delivery & Reporting Textbook Chapter: 21
	14	Nov 22 - Nov 26 <i>Nov 17-19: Thanksgiving</i>	
Module 12	15	Nov 29 - Dec 3	Information Dissemination Textbook Chapter: 31
	16	Dec 6 - Dec 10 <i>Dec 9-10: Reading Days</i>	Final Exam; Post-Survey
<i>*Articles and additional required activities listed in Canvas</i>			

*“Every student can learn, just not on the same day, or the same way.” –George Evans*