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University of Oklahoma
Gallogly College of Engineering
Data Science and Analytics
DSA 5900: Professional Practice

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Catalog Description:

This course focuses on real-world application of the skills taught in DSA core courses. This course allows a student to earn credit toward the degree requirements by completing an intense practicum experience. (Fall, Spring, Summer)

Credit Hours:	1-4 hours, may be repeated not to exceed 4 total hours
Textbook:	None required, assigned readings to be given by Faculty Coordinator
Faculty Coordinator:	Matt Beattie
Faculty Advisor:	Faculty member approved by the Faculty Coordinator
Office Hours:	Office hours are by appointment
Prerequisites:	Completed enrollment in DSA 5103, DSA 5113, DSA 4413, DSA 5005 and DSA 4513. Graduate standing and approval from the Faculty Coordinator
Course Management:	Canvas course management system will be used for all course materials and for submissions of all assignments canvas.ou.edu

Eligibility:

The student must identify a practicum sponsor and secure a practicum topic. The student is encouraged to consult with the faculty coordinator and the practicum sponsor prior to preparing a practicum proposal. The student should submit the proposal to the course Canvas site no later than the first week of the semester of practicum enrollment. The faculty coordinator will evaluate the proposal to determine if this practicum meets the requirements for credit. The proposal should identify the practicum sponsor, the objectives and plan for practicum, and the deliverables as agreed upon by the practicum sponsor and the faculty coordinator.

To meet the practicum requirements, the set of activities that the student expects to complete during the practicum must contain high-level Data Science and Analytics work, such that the sum of the experiences for the practicum is equivalent to what a student would learn in an equivalently credited, graduate-level course.

In addition, the practicum sponsor overseeing the practicum must agree in writing to prepare two evaluations/progress reports over the course of the experience. The reports can be in the form of an email or letter. The student must provide updates on their progress via email each month.

The proposal is viewed as a contractually obligated statement of work for the practicum project. It may not be changed without the approval of the faculty coordinator.

Course Description:
Course Goals:

1. *Apply the data science process to an industry or academic topic.*
2. *Apply knowledge learned throughout the DSA curriculum.*
3. *Exhibit high quality writing skills through the completion of a formal project report.*
4. *Exhibit high quality oral and visual communications skills through the presentation of the project.*
5. *Provide useful data-driven insights.*

Learning Outcomes:

- *Demonstrate the ability to conduct each stage of the data science process.*
- *Demonstrate the use of practical tools, such as GitHub, PowerBI or Tableau, Jupyter Lab, and LaTeX.*
- *Use storytelling techniques to present the project.*
- *Deliver insights in an effective method to colleagues and decision makers*

Expectations for the 4-Credit Hour Practicum:
A four-credit hour course represents a significant amount of work by the student. Students electing for the four-credit option are expected to demonstrate the ability to completely manage a complex investigation, much like they would in an industry role. The topic must require independent data collection, robust analysis, and written and oral communication aimed to inform an industry or academic executive. The ability to communicate effectively during the oral presentation is a significant component of the evaluation of the student's performance. Four-credit hour students are encouraged to use modern visualization tools, such as Tableau or PowerBI, to visualize data.

Expectations for the 1-Credit Hour Practicum:
Students taking the one-credit hour course may either use the practicum to practice industry analytic skills or may elect to use the course to supplement research associated with a thesis. The work for the practicum must be separate from work associated with the thesis itself. In either case, the student is expected to complete a project. If the student opts to expand on data analysis associated with a thesis, he or she must complete the project with a conclusive finding and communicate that finding through the project report and presentation.

Participation Expectations:
This course mirrors real-world industry and academic environments. The student is responsible for the pace and completion of the project. This includes scheduling time with the project sponsor and faculty coordinator as needed. Additionally, the faculty coordinator will provide readings and videos throughout the course that the student must read and watch. Communication from the faculty coordinator will be through email, Zoom Conferences, and Microsoft Teams (a component of the OU Office 365 suite). All students are encouraged to collaborate through these methods.

Texts, Tools and Materials:

- GitHub: the student must establish a GitHub repository for their project under their OU.edu email and provide access to the practicum sponsor and faculty coordinator. The student is responsible for properly safeguarding any corporate data used with the project.
- Microsoft Teams: supplied as part of OU's Office365 subscription
- LaTeX: optional, by highly recommended for one-credit hour students. May be used for the preparation of the written project.
- Jupyter-Lab: may be used for project updates
- Tableau or PowerBI: optional visualization tools, highly recommended for four-credit hour students
- Recommended: Cole Nussbaumer Knaflic, <u>Storytelling with data: a data visualization guide for business professionals,</u> ISBN: 9781119002253. This book recasts many of Tufte's recommendations in a practical way. It has a very good section on storytelling.

Due Dates and Deliverables:

1. **<u>Proposal:</u>** The proposal must be submitted in Canvas no later than the end of the first week of the semester of enrollment. It must be typewritten and follow the proposal guidelines.
2. **<u>Final Report:</u>** The report must be submitted in Canvas 48 hours prior to the presentation. This report will typically be 15-25 pages long and must be typewritten. Review the Final Report Guidelines before preparing your report. The typewritten report must contain the same sections as the proposal, but with updated and expanded information as appropriate to describing the outcomes.
3. **<u>Oral Presentation:</u>** A formal oral presentation highlighting the objectives, plan, deliverables, and results as described in the written report. This presentation should be 15 minutes for the 1-hour practicum taken by thesis students, and 25 minutes for the 4-hour practicum taken by non-thesis students.

Grading:

This course is graded on a Satisfactory/Unsatisfactory (S/U) basis. To earn a grade of "S", all criteria in the following table must be met satisfactorily.

Assessment Items	Criteria
Proposal	Proposal is grammatically correct, includes all required sections, and clearly identifies practicum work tasks and relevance to the degree curriculum.
Supervisor's Report	Lists dates worked, describes project and student's responsibilities, and evaluates student's performance.
Technical Performance	Project demonstrates the application of techniques learned in the DSA curriculum.
Final Report	Report is well organized, clearly written, contains no typographical or grammatical errors, and includes all required sections.
Oral Presentation	Presentation is visually appealing and well-constructed. Student confidently demonstrates command of project knowledge and effectively responds to committee's questions.

Late Submission Policy

Approval for late work must be requested from and received by the faculty coordinator prior to submission.

Additional Support for Learning

The instructor will conduct office hours to support students. Additionally, the instructor will respond to email inquiries as best as possible, usually within 24 hours. Students are encouraged to use the Teams chat forum to submit questions, gather help from peers, and otherwise communicate.

University Policies

Academic Integrity

The Student's Guide to Academic Integrity defines academic misconduct as "any act that improperly affects the evaluation of a student's academic performance or achievement," including cheating on exams, improper collaboration on assignments, and plagiarism (https://www.ou.edu/integrity/students). The most common violation at the University is plagiarism. Plagiarism is "an act or instance of using or closely imitating the language and thoughts of another author without authorization and the representation of that author's work as one's own" (https://www.dictionary.com/browse/plagiarism). Plagiarism includes using someone else's written ideas or thoughts, as in published literature, as well as using someone else's code and solutions that may be published on the internet.

For DSA 5900, you may write your programs from scratch, you may start from code that you have previously written, or you may start from programs for which the source code is freely available on the web. It is not acceptable to use code generated by other students or peers. If you do not start from scratch (even if it is your prior work), you must give a complete and accurate accounting of where all

your code came from and indicate which parts are original, which are changed, and which you got from which other source. Failure to give credit where credit is due constitutes plagiarism.

When completing assignments in this class, please keep the following in mind:

- Solutions should not be copied from internet sources, including cheat sites, and paid professional programmers.
- Do not show, give, or email another student a copy of your work before the submission deadline.
- The penalties for permitting your work to be copied are usually the same as the penalties for copying someone else's work, since it is not possible to distinguish the person who copied from the person who allowed their work to be copied.

All academic misconduct will be reported to the Campus Judicial Coordinator. The procedure to be followed is documented in the University of Oklahoma Academic Misconduct Code (http://integrity.ou.edu/summary_of_the_process.html). In the unlikely event that I elect to admonish the student, the appeals process is described in http://www.ou.edu/provost/integrity-rights/

Religious Observance
It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty.
[See Faculty Handbook 3.15.2]

Reasonable Accommodation Policy
Students requiring academic accommodation should contact the Disability Resource Center for assistance at (405) 325-3852 or TDD: (405) 325-4173. For more information, please see the Disability Resource Center website http://www.ou.edu/drc/home.html Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

Title IX Resources and Reporting Requirement
For any concerns regarding gender-based discrimination, sexual harassment, sexual assault, dating/domestic violence, or stalking, the University offers a variety of resources. To learn more or to report an incident, please contact the Sexual Misconduct Office at 405/325-2215 (8 to 5, M-F) or smo@ou.edu. Incidents can also be reported confidentially to OU Advocates at 405/615-0013 (phones are answered 24 hours a day, 7 days a week). Also, please be advised that a professor/GA/TA is required to report instances of sexual harassment, sexual assault, or discrimination to the Sexual Misconduct Office. Inquiries regarding non-discrimination policies may be directed to: Bobby J. Mason, University Equal Opportunity Officer and Title IX Coordinator at 405/325-3546 or bjm@ou.edu. For more information, visit http://www.ou.edu/eoo.html.

Adjustments for Pregnancy/Childbirth Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact your professor or the Disability Resource Center at 405/325-3852 as soon as possible. Also, see http://www.ou.edu/eoo/faqs/pregnancy-faqs.html for answers to commonly asked questions.

Final Exam Preparation Period

Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's Final Exam Preparation Period policy (https://apps.hr.ou.edu/FacultyHandbook#4.10).

Emergency Protocol for On Campus Locations

During an emergency, there are official university procedures that will maximize your safety.
Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather

1. *LOOK* for severe weather refuge location maps located inside most OU buildings near the entrances
2. *SEEK* refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building.
3. *GO* to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows.
4. *GET IN, GET DOWN, COVER UP*
5. *WAIT* for official notice to resume normal activities.

Link to Severe Weather Refuge Areas , Severe Weather Preparedness - Video

Armed Subject/Campus Intruder: If you receive an OU Alert to shelter-in-place due to an active shooter or armed intruder situation or hear what you perceive to be gunshots:

1. *GET OUT*: If you believe you can get out of the area WITHOUT encountering the armed individual, move quickly towards the nearest building exit, move away from the building, and call 911.
2. *HIDE OUT*: If you cannot flee, move to an area that can be locked or barricaded, turn off lights, silence devices, spread out, and formulate a plan of attack if the shooter enters the room.
3. *TAKE OUT*: As a last resort fight to defend yourself.
4. *For more information, visit http://www.ou.edu/emergencypreparedness.html*

Shots Fired on Campus Procedure - Video

Fire Alarm/General Emergency: If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates:

1. *LEAVE* the building. Do not use the elevators.
2. *KNOW* at least two building exits
3. *ASSIST* those that may need help
4. *PROCEED* to the emergency assembly area
5. *ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues.*
6. *WAIT* for official notice before attempting to re-enter the building.

OU Fire Safety on Campus