Instructor Contact Information

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Office hours: see http://michael.hahsler.net

Course Information

Course Web Site: http://michael.hahsler.net/SMU/DS1300/

Lecture: TuTh 9:30-10:5am. This course will be held as a virtual course and meets at the scheduled times via Zoom.

Labs: Th 12:30-1:45am. Labs will be held as Lab office hours using virtual meetings (Zoom) at the scheduled times.

See Canvas (http://canvas.smu.edu/) for details and the Zoom meeting IDs.

Course Description

Data have become one of the most critical resources in today’s world. This course provides a first introduction to the exciting field of data science using applications and case studies from various domains (e.g., social media, marketing, sociology, engineering, digital humanities). The course will introduce data-centric thinking including a discussion of how data is acquired, managed, manipulated, visualized, and used to support problem-solving. The fundamental practical skills necessary will be taught in class, and each step will be illustrated with small examples. Tools presented in this course include Excel, along with other state-of-the-art tools. No prior knowledge of statistics, math, or programming is necessary. Prerequisites: None

Learning Outcomes

At the end of this course, students will be able to:

1. Identify applications of data science in today’s world.
2. Identify privacy and ethical issues associated with the use of data.
3. Students will demonstrate an understanding of how particular technologies work.
4. Understand and apply technology for visualization and descriptive analytics to explore data and communicate the results.

UC Breath Requirement for Technology and Mathematics

- SLO 1c. Students will demonstrate an understanding of how particular technologies work.

GE Technological Advances and Society Breadth

- Courses in this category provide students an understanding of, or an understanding of the use of, a particular technology or technologies.
Courses in this category have a require students to demonstrate an understanding of the impact of technology on a particular domain.

Course Materials

You will **need access to a computer**. We will work on problems in class, so bring your laptop.

Textbooks are **not required**. All needed material will be distributed in class via the course web site.

- Tutorials Point, “*Excel Tutorial,*” Online: [https://www.tutorialspoint.com/excel/](https://www.tutorialspoint.com/excel/)
- Tutorials Point, “*Excel for Data Analysis Tutorial,*” Online: [https://www.tutorialspoint.com/excel_data_analysis/](https://www.tutorialspoint.com/excel_data_analysis/)

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**Course Topics and Class Outline**

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<tr>
<th>Date</th>
<th>Topics</th>
<th>Lab</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-24</td>
<td>Introduction</td>
<td></td>
<td>Why you should care</td>
</tr>
<tr>
<td>9-1</td>
<td>Data, Privacy and Ethics</td>
<td></td>
<td>Weather data collection</td>
</tr>
<tr>
<td>9-8</td>
<td>Tables – Excel</td>
<td>Lab 1</td>
<td></td>
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<tr>
<td>9-15</td>
<td>Tables – Excel</td>
<td>Lab 2</td>
<td></td>
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<tr>
<td>9-22</td>
<td>Visualization and Charts – Excel</td>
<td>Lab 3</td>
<td>SMU’s next campus</td>
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<td>9-29</td>
<td>Tables - SQL</td>
<td>Lab 4</td>
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<tr>
<td>10-6</td>
<td>Tables – SQL</td>
<td>Lab 5</td>
<td></td>
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<tr>
<td>10-13</td>
<td><strong>Midterm</strong> (10-15)</td>
<td></td>
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<tr>
<td>10-20</td>
<td>Descriptive Analytics – Rapidminer</td>
<td></td>
<td>Project: Milestone 1</td>
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<tr>
<td>10-27</td>
<td>Descriptive Analytics – Rapidminer</td>
<td></td>
<td>Project</td>
</tr>
<tr>
<td>11-3</td>
<td>Predictive Analytics – Rapidminer</td>
<td>Lab 6</td>
<td>Project: Milestone 2</td>
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<td>11-10</td>
<td>Predictive Analytics – Rapidminer</td>
<td>Lab 7</td>
<td>Project</td>
</tr>
<tr>
<td>11-17</td>
<td>Predictive Analytics – Rapidminer</td>
<td>Lab8</td>
<td>Project: Milestone 3</td>
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<tr>
<td>11-24</td>
<td>Predictive Analytics – Rapidminer</td>
<td></td>
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<td>11-25 – 12-1</td>
<td><strong>Thanksgiving Break</strong></td>
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<tr>
<td>12-3</td>
<td>Project Presentations (prerecorded)</td>
<td></td>
<td>Project report due</td>
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**Course Work and Grading**

It is expected that each student will keep up with the reading as outlined above. Additional materials may be referenced in class as needed. The course grade is based on the following components:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percent of final grade</th>
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</thead>
<tbody>
<tr>
<td>Labs</td>
<td>10%</td>
</tr>
<tr>
<td>Mid-term Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Project</td>
<td>40%</td>
</tr>
<tr>
<td>Participation</td>
<td>10%</td>
</tr>
</tbody>
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*EMIS/DS 1300: A Practical Introduction to Data Science*

Prepared by Michael Hahsler

Updated: 08/18/20
**Labs**

Labs will provide the students with the opportunity to practice the practical aspects of data science. The focus is on problem solving with the use of the data science methods and tools introduced during that week in the lecture (see syllabus). The lab instructors will also give the students individualized guidance and feedback for their labs and mini projects throughout the semester.

Labs will be assigned on Monday morning (by 9am) and need to be submitted by the Friday that week at 11:59pm via Canvas. The labs will be virtual TA office hours delivered using Zoom (see above for days and times). You need to have already worked on the problem and done online research. The TA is not allowed to help you unless you have a specific question. Lab office hours are recorded and will be made available to all students the same day via Canvas/Panopto. Start early with your lab/project, so you are able to use the Lab office hours effectively. In addition, you are encouraged to use the Lab discussion forum on Canvas to ask question and post comments. These questions can be answered by other students, the Lab TA or me. Note: Do not expect last minute questions for Labs to be answered in time for submission. Questions that are asked after the last virtual TA office hour may not be answered by the lab submission time.

**Assignments, Project Milestones and Final Project Report**

You will work on the first few assignments individually and then on a larger project comprising several milestones in teams of three students. The goal is to find data-driven answers to several questions and presenting the results in professional reports.

**Group assignments:** Project teams are self-organized on canvas. You may switch groups after each mini project. Each team is required to submit a list clearly stating who contributed to what part of the group assignment.

**Participation and Attendance Policy**

This class is fast-paced and students need to attend class and the lab to not fall behind. Attendance will be taken each session. **It is that student's responsibility to**

- inform the instructor of any absence at least 24 hours in advance, and to
- make arrangements to make up any missed work and to
- ensure that assignments are submitted on time or early.

The participation score is impacted by attendance. For remote course delivery, participation is done by posting questions and answering questions in the Canvas discussion board.

**Late assignments will not be accepted.** Any assignments that will be missed (including those due to university-sanctioned events) must be completed before the due date. This includes homework assignments, projects and exams.

**Additional Information**

- **Disability Accommodations:** Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit [http://www.smu.edu/Provost/SASP/DASS](http://www.smu.edu/Provost/SASP/DASS) to begin the process. Once
approved and registered, students will submit a DASS Accommodation Letter to faculty through the electronic portal DASS Link and then communicate directly with each instructor to make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

- **Religious Observance:** Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. ([https://www.smu.edu/StudentAffairs/Chaplain/ReligiousHolidays](https://www.smu.edu/StudentAffairs/Chaplain/ReligiousHolidays)).

- **Excused Absences for University Extracurricular Activities:** Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (See [2020-2021 SMU Undergraduate Catalog](https://www.smu.edu/StudentAffairs/Chaplain/ReligiousHolidays) under “Enrollment and Academic Records/Excused Absences.”)

- **Syllabus Statement for Pregnant and Parenting Students:** Accommodations for pregnant and parenting students: Under Title IX students who are pregnant or parenting may request academic adjustments by contacting Elsie Johnson ([elsiej@smu.edu](mailto:elsiej@smu.edu)) in the Office of the Dean of Students, or by calling 214-768-4564. Students seeking assistance must schedule an appointment with their professors as early as possible, present a letter from the Office of the Dean of Students, and make appropriate arrangements. Please note that academic adjustments are not retroactive and, when feasible, require advance notice to implement.

- **Covid-19 Attendance Statement:** Students who are experiencing COVID-19 symptoms or who have been notified through contact tracing of potential exposure and need to self-quarantine or isolate must follow the protocols laid out in SMU’s [Contact Tracing Protocol](https://www.smu.edu/StudentAffairs/HealthSafety/Covid19). To ensure academic continuity, students in these situations will not be penalized and will be provided appropriate modifications to assignments, deadlines, and testing. Please also note that SMUFlex classes might, in rare circumstances, go remote for two-week periods to accommodate COVID-related issues. To ensure these necessary accommodations, affected students must:
  - Provide as much advance notification as possible to the instructor about a change in circumstances. Students must notify their instructor about a potential absence as well as plans for a return to class. For cases in which students test positive for COVID-19, they should fill out a [CCC form at this link](https://www.smu.edu/StudentAffairs/HealthSafety/Covid19).
  - Communicate promptly with the instructor to establish, as necessary, alternative assignments and/or changes to deadlines and exams. Students are then responsible for meeting the expectations laid out in these alternative arrangements.
  - Continue participation in class via Zoom, as health circumstances permit. Attend class regularly, when not in a situation outlined above, in accordance with safety measures laid out by SMU CAN in the [Pledge to Protect](https://www.smu.edu/StudentAffairs/HealthSafety/Pledge) (including wearing masks, maintaining social distancing, and cleaning personal space after class). In-person participation in SMUFlex classes is required on students’ assigned red/blue rotation days except in cases when students are experiencing illness, are in self-quarantine or in isolation.
• Students facing multiple or extended COVID-19-related absences or illness can work with the Office of the Dean of Students to consider options such as fully remote learning or medical withdrawal.

• This policy, aligned with the SMU Honor Code and the SMU Pledge to Protect, relies on mutual trust and respect between students and faculty to ensure safety, academic integrity, and instructional continuity.