DSBA6010, ITCS6010/8010, ITIS6220/8220 Data Privacy

The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by announcement in class by changes to this syllabus posted on the course website on Canvas.

Course Information

<table>
<thead>
<tr>
<th>Credit Hours: 3.000</th>
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<tbody>
<tr>
<td>Times: Wednesdays 2:30-5:15 pm</td>
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<tr>
<td>Locations: Canvas/Zoom for Online format; CHHS 380 for Face-to-Face format</td>
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<tr>
<td>Canvas link: <a href="https://uncc.instructure.com/courses/159397">https://uncc.instructure.com/courses/159397</a></td>
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Instructor: Dr. Liyue Fan
Email: liyue.fan@uncc.edu
Office Hours: Tu 3:30-4:30pm or per appointment (locations posted on Canvas)

Course Description

Today’s personal data is aggregated at large scales, increasing the risk of privacy violations or breaches in critical sectors (e.g., health care, automation, and finance). Current laws such as HIPAA and GDPR protect personal data in the United States and around the world. The research-oriented course will discuss privacy-enhancing technologies from data de-identification to state-of-the-art differential privacy research (e.g., deployed at Apple and the Census Bureau). We will also include broader discussions around topics such as data governance, ethics, and algorithm fairness.

Course Prerequisites
This course is open to interested graduate students with basic knowledge in programming, algorithms, proof techniques, and probability. Familiarity with databases, data mining, and machine learning would help.

Course Objectives

The course is set up as three modules:

1. Data Privacy Overview and Fundamentals: data privacy primer, de-identification, anonymization, differential privacy.
2. Data Privacy Research and Applications: privacy enhancing technologies for a variety of data types, including high-dimensional, temporal, location data, multi-media; privacy in machine learning; privacy and distributed systems; differential privacy use cases.
3. Advanced Topics in Data Privacy: laws, ethics, fairness, governance, etc.

Module 1 & 3: Instructor will lead the discussion with synchronous or asynchronous content.

Module 2: Students read papers and lead the discussion in class.

Course Topics and Tentative Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic - Format</th>
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<tbody>
<tr>
<td>Data Privacy Overview and Fundamentals</td>
<td></td>
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<tr>
<td>8/25/21</td>
<td>Introduction of Data Privacy - Online</td>
</tr>
<tr>
<td>9/1/21</td>
<td>De-identification and Anonymity - Online</td>
</tr>
<tr>
<td>9/8/21</td>
<td>Differential Privacy Basic Mechanisms - Online</td>
</tr>
<tr>
<td>9/15/21</td>
<td>Local Differential Privacy - Online</td>
</tr>
<tr>
<td>Data Privacy Research and Applications</td>
<td></td>
</tr>
<tr>
<td>9/22/21</td>
<td>Privacy for High-dimensional/Temporal Data - Online</td>
</tr>
<tr>
<td>9/29/21</td>
<td>Privacy for Location-based Services - Online</td>
</tr>
<tr>
<td>10/6/21</td>
<td>Privacy for Multimedia Data - Online</td>
</tr>
<tr>
<td>10/13/21</td>
<td><strong>Project Proposals</strong> - Face-to-Face or Online</td>
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<tr>
<td>10/20/21</td>
<td>Privacy in Machine Learning - Online</td>
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### Assessment / Grading

**Assignments (45% weight):** There will be reading assignments and paper presentations. For reading assignments, you will read papers and submit a written review. You are expected to present at least one paper in class.

**Project (45% weight):** The course includes a substantial course project. Different project ideas and options will be discussed and posted. Project deliverables include project proposal, in class project presentation, project report, source code, and executable package if applicable.

**Participation (10% weight):** You are expected to actively participate in in-class discussions and individual or group exercises.

This course will employ a 10-point scale. Final letter grades are assigned as follows:

- **A =** 90% or above
- **B =** 80% or above
- **C =** 70% or above
- **F =** below 70%

### Required Textbook / Resources
There are no required textbooks. The course is based on recent research papers and selected book chapters, which will be posted on Canvas.

**Course Policies**

**Attendance and Late Policy**

Students are expected to attend every class and remain in class for the duration of the session. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course grade. An absence, excused or unexcused, does not relieve a student of any course requirement. Regular class attendance is a student’s obligation, as is a responsibility for all the work of class meetings, including tests and written tasks. Any unexcused absence or excessive tardiness may result in a loss of participation points.

Assignments are considered late if they are not completed by the stated due date and time. If an assignment is late, you will have two additional days to complete it for late credit (unless otherwise stated in the syllabus or assignment instructions.) The *late penalty* equals a 20% reduction to the grade you would have received. Work received after two days will receive no credit.

Students are welcome to discuss with the instructor regarding medical appointments, military/court orders, and/or personal and family emergencies, such as a death in the immediate family, where a student is able to provide an instructor with appropriate supporting documentation.

The Office of Student Assistance and Support Services (SASS) can provide notification to faculty of emergency situations (personal and family). Students can submit an [online request form](http://bit.ly/332eaGd) and attach supporting documentation. In cases of absence due to pregnancy or parenting (pregnancy, childbirth, false pregnancy, termination of pregnancy, or recovery from any of these conditions), students should contact the Title IX Office to obtain absence verification by completing the form at [http://bit.ly/332eaGd](http://bit.ly/332eaGd).

**Proactive Participation and Group Work**

Collaboration and thoughtful discussions are most important in making the course productive and fun, especially in an online environment. Discussion boards will be used for asking questions and sharing knowledge. Student groups will be formed to facilitate close collaborations.
Students with a documented learning disability that would prevent them from participating should notify the instructor at the beginning of the semester.

Class Communication

All class communications will be sent via Canvas. Questions regarding course material and assessments should be posted on Discussions. Students are welcome to use emails for private matters.

Topics and Assignments

The latest reading and assignments are available on the course web site. The list will be updated as we proceed throughout the semester. Students are responsible for getting up-to-date information on the current readings and assignments.

Face Covering Requirements on Campus

It is the current policy of UNC Charlotte that as a condition of on-campus enrollment, all students are required to engage in safe behaviors to avoid the spread of COVID-19 in the 49er community. Such behaviors specifically include the requirement that all students properly wear CDC-compliant face coverings in all indoor spaces on campus, including classrooms and labs, regardless of vaccination status. Failure to comply with this policy in the classroom or lab may result in dismissal from the current class session. If the student refuses to leave the classroom or lab after being dismissed, the student may be referred to the Office of Student Conduct and Academic Integrity for charges under the Code of Student Responsibility.

Academic Integrity

All students are required to read and abide by the Code of Student Academic Integrity. Violations of the Code of Student Academic Integrity, including plagiarism, will result in disciplinary action as provided in the Code. Definitions and examples of plagiarism are set forth in the Code. The Code is available from the Dean of Students Office or online.

Faculty may ask students to produce identification at examinations and may require students to demonstrate that graded assignments completed outside of class are their own work.
Course Credit Workload

This 3-credit course requires 3 hours of classroom or direct faculty instruction and 6 hours of out-of-class student work each week for approximately 15 weeks.

Absenteeism or Tardiness regarding COVID-19

Students are expected to attend every class and remain in class for the duration of the session when it is safe to do so in accordance with university guidance regarding COVID-19. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course grade. An absence, excused or unexcused, does not relieve a student of any course requirement. Regular class attendance is a student’s obligation, as is a responsibility for all the work of class meetings, including tests and written tasks. Any unexcused absence or excessive tardiness may result in a loss of participation points.

Students are encouraged to work directly with their instructors regarding their absence(s). For absences related to COVID-19, please adhere to the following:

- **If you are sick:** If you test positive or are evaluated by a healthcare provider for symptoms of COVID-19, indicate so on your Niner Health Check to alert the University. Representatives from Emergency Management and/or the Student Health Center will follow up with you as necessary. Submit a copy of your Niner Health Check notification email to your instructors.
- **If you have been exposed** to COVID-19 positive individuals and/or have been notified to self-quarantine due to exposure, indicate so on your Niner Health Check to alert the University. Representatives from Emergency Management and/or the Student Health Center will follow up with you as necessary. Submit a copy of your Niner Health Check notification email to your instructors.

To return to class after being absent due to a period of self-quarantine, students should submit a copy of their Niner Health Check clearance email to their instructor(s). To return to class after being absent due to a COVID-19 diagnosis, students should submit an online request form to Student Assistance and Support Services (SASS). Supporting documentation can be attached directly to the request form and should be from a student’s health care provider or the Student Health Center, clearly indicating the dates of absences and the date the student is able to return to class. Instructors will be notified of such absences.

If you are absent from class as a result of a COVID-19 diagnosis or quarantine, as instructor I will do the following to help you continue to make progress in the course: e.g., evaluate the online learning options and assignments on a case-by-case basis. The final decision for approval of all absences and missed work is determined by the instructor.
Classroom Recording

Electronic video, image capture, and/or audio recording is not permitted during class, whether conducted in person or online, unless the student obtains permission from the instructor. If permission is granted, any distribution of the recording is prohibited. Students with specific electronic recording accommodations authorized by the Office of Disability Services do not require instructor permission; however, the instructor must be notified of any such accommodation prior to recording. Any distribution of such recordings is prohibited.

Code of Student Responsibility

The UNC Charlotte Code of Student Responsibility (the Code) sets forth certain rights and responsibilities in matters of student discipline. The Code defines these responsibilities and guarantees you certain rights that ensure your protection from unjust imposition of disciplinary penalties. You should familiarize yourself with the provisions and procedures of the Code. Please refer to the full Code for complete policies and procedures, available at legal.uncc.edu/policies/up-406 or the Dean of Students Office.

Disability Accommodations

Students in this course seeking accommodations to disabilities must first consult with the Office of Disability Services and follow the instructions of that office for obtaining accommodations.

Title IX Reporting

UNC Charlotte is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. UNC Charlotte has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with civil protective orders, and more.

Please be aware that all UNC Charlotte employees, including faculty members, are expected to relay any information or reports of sexual misconduct they receive to the Title IX Coordinator. This means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking, I am expected to report the information to the Title IX Coordinator. Although I am
expected to report the situation, you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone confidentially, you can contact the following on-campus resources, who are not required to report the incident to the Title IX Coordinator: (1) University Counseling Center (counselingcenter.uncc.edu, 7-0311); or (2) Student Health Center (studenthealth.uncc.edu, 7-7400). Additional information about your options is also available at titleix.uncc.edu under the “Students” tab.

**Religious Accommodation**

It is the obligation of students to provide faculty with reasonable notice of the dates of religious observances on which they will be absent by submitting a [Request for Religious Accommodation Form](http://legal.uncc.edu/policies/ps-134.html) to their instructor prior to the census date for enrollment for a given semester [http://legal.uncc.edu/policies/ps-134.html](http://legal.uncc.edu/policies/ps-134.html). The census date for each semester (typically the tenth day of instruction) can be found in UNC Charlotte’s Academic Calendar ([http://registrar.uncc.edu/calendars/calendar.htm](http://registrar.uncc.edu/calendars/calendar.htm)).