

CURRICULUM COMMITTEE REPORT

The Curriculum Committee met on September 13th, 2022 and is recommending the following courses to the Graduate Board for approval at its September 22nd meeting.

New Courses:

COS 578 Introduction to Private Machine Learning (AI)

Modifications:

PSE 509 Experimental Design

Special Note: the following course modifications were approved this past summer

ACC 608 Topics in Accounting

MBA 649 Strategic Decision Making

New Graduate Course Proposal

Academic Unit: Computing & Information Science

Course Designator & Number: COS 578 **Effective Semester:** Fall 2023

Course Title: Introduction to Private Machine Learning (AI)
New Course

Course Type: _____

Proposed Catalog Description:

Overview of the role of AI and Machine Learning in improving understanding privacy concepts as well as learning how to develop privacy-preserving and fair data-intensive applications.
Special Note"Topics include Information privacy Fundamentals, differential privacy and its variants; algorithmic tools for differential privacy; applications of differential privacy; and differential privacy in industry.

Course Prerequisites: STS232, STS332, or STS434 or by Permission. Course requires a basic understanding of software engineering including requirements, design, and testing, as well as introductory knowledge of software security and programming.

Credit Hours: 3 **Component:** Lecture

Cross-Listed Course: COS 478

Text(s) Planned for Use:

- C. Dwork and A. Roth. The Algorithmic Foundations of Differential Privacy. 2014.
- S. Vadhan. The Complexity of Differential Privacy. 2017
- K. Ligett, K. Nissim, V. Shmatikov, A. Smith, J. Ullman. Differential Privacy: From Theory to Practice. 7th Bar Ilan University Winter School on Cryptography 2017

Course Instructor: Sepideh Ghanavati, Assistant Professor, 2 + 1

Reason for new course:

It is an important topic in computer science and we do not have any course that currently addresses these topics at the college level.

Does this course addition require additional department or institutional facilities, support and/or resources, or library subscriptions and resources?

No. The academic unit will not request additional resources for this course

Additional Resources:

Academic Units Affected (if any):

None

Course Frequency: once every two years

Can this course be repeated for credit? No

Total number of credits allowed: _____

Total number of completions allowed: _____

Can students enroll multiple times in a term? No

Mode of Instruction: Hyflex

Endorsements

Leader: Approved Approved Date: 04/23/22

College CC Chair: tmcole@maine.edu Approved Date: 05/09/22

College Dean: emily.haddad@maine.edu Approved Date: 07/14/22

Leader: _____ Date: _____

College CC Chair: _____ Date: _____

College Dean: _____ Date: _____

DLL: _____ Date: _____

Graduate School

Date

University of Maine
School of Computing and Information Science

Course Name: Introduction to Private Machine Learning (AI) **Number:** COS578/478 **Semester:** Fall 2023
Classroom: TBD **Class Hours:** TBD

Instructor: Sepideh Ghanavati **Office:** Boardman Hall234 **Email:** sepideh.ghanavati@maine.edu
Instructor Office Hours: By appointments.

Catalogue Listing: Overview of the role of AI and Machine Learning in improving understanding privacy concepts as well as learning how to develop privacy-preserving and fair data-intensive applications.

Reading Materials: A reading list is provided in another document. The instructor will include the required reading material from the list, at the end of each lecture slides. The reading materials will be divided into mandatory and optional readings.

Textbook: There is no official textbook for this course. The followings are good resources.

- C. Dwork and A. Roth. The Algorithmic Foundations of Differential Privacy. 2014.
- S. Vadhan. The Complexity of Differential Privacy. 2017
- K. Ligett, K. Nissim, V. Shmatikov, A. Smith, J. Ullman. Differential Privacy: From Theory to Practice. 7th Bar Ilan University Winter School on Cryptography 2017

Course Prerequisites: : STS 232, STS 332, or STS 434 or by permission. Course requires a basic understanding of software engineering including requirements, design, and testing, as well as introductory knowledge of software security and programming or by permission.

Expected prior knowledge and skills in: The successful student should have introductory knowledge of software engineering including requirements, design, and testing, introductory knowledge of software security and proficiency in programming.

Course objectives:

This course covers algorithms and techniques to help design and develop privacy-preserving applications.

Course Topics: Information privacy Fundamentals, differential privacy and its variants; algorithmic tools for differential privacy; applications of differential privacy; and differential privacy in industry.

- Learn the fundamental concepts related to privacy and legal frameworks.

Learning objectives: challenges in analysis of legal or policy text.

- Learn about algorithmic tools for differential privacy and its variants.
- Develop privacy-preserving systems.

Activities and Evaluation:

Students' performance will be evaluated based on class participation/discussions, assignments, a project and three exams.

- **Lectures** – There will be 150 minutes of lectures every week, Tuesdays and Thursdays, in which students will learn about topics in privacy and AI.
- **Readings** – Students will be assigned weekly readings from the academic papers on different aspects of privacy.
- **(CP) – Class Participation and Slack Discussion (10%)** – Students reflect on reading materials and discussions in the class as well as on COS598 Slack channel. We discuss different subjects related to

the course in class and the participation is required, either in class, on slack or both. Discussions are **individual** assessments.

- **(A) – Assignments (30%)** – Students will submit 3 take-home assignments whereby students apply methods taught in class to sample problems. The assignments will be either **individual** or **group** efforts, depending on the nature of the assignment. The instructor will announce the type in class.
Graduate students must complete this activity individually.
- **(D) – Discussion Reports (15%)** – Throughout the semester, students will submit 5 or 6 discussion reports. The instructor will provide the students with case study discussions, papers, or news-related topics and students are expected to write 1 – 2 pages report on the discussion topic. This is an **individual** assessment.
Graduate students must complete all of the six reports.
For undergraduate students, the best five out of six will be counted.
- **(TP) – Term Project (50%)** – Students will work on a project on a topic from the list given by the instructor. The detail of the topics must be approved by the instructor by the deadline specified below. The aim of these projects is to delve into one of the emerging topics related to privacy and AI. The details of the project are given on Brightspace.
- **Attendance Policy** – Attendance is not directly mandatory in this course. The students are expected to watch the zoom sessions if they cannot attend the class and they must participate in discussions in class, or on COS598 slack channel regularly to receive the class participation grades.

Note that, the total of possible grade in this class is 105% which includes 5% bonus mark.

Grading Policy:

The grading scale for the final mark is as follows:

Letter Grades	Numerical Range	Letter Grades	Numerical Range
A	95 – 100	C	74 - 76.99
A-	90 - 94.99	C-	70 - 73.99
B+	87 - 89.99	D+	67 - 69.99
B	84 - 86.99	D	64 - 66.99
B-	80 - 83.99	D-	60 - 63.99
C+	77 - 79.99	F	0 - 59.99

This scale may be curved to raise student grades at the instructor's discretion.

- Submitted work is due when specified. **With the instructor's permission and only in special cases**, you may be able to submit **TWO** days late (with a penalty). For every 12 hours of late submission, 10% marks will be deducted. That is, if you are late by two full days, 40% mark will be deducted. After 48h, your assignment, project and reports will be marked as 0, **with no exception.**
- Every submission must be done through Brightspace in a digital format. Submissions via email or in person will be marked as 0. If you encounter any problems with Brightspace, it is your own duty to inform the instructor **in a timely manner, before the due date.** Brightspace problems can't be used as an excuse for late submission.

Course Schedule: The table (below) provides the initial distribution of topics discussed over the weeks in the semester. **This schedule is tentative and subject to change during the semester at the instructor's discretion.** All changes will be announced in class or on the course website (Brightspace). Students are responsible for making sure they are informed about announcements.

Week	Class (TT)	Activity	Material
1	08/31	L0	Syllabus, Introduction and Academic Paper Writing
	09/02	L1	Introduction to Information Privacy
2	09/07	L2	Analysis of Privacy Regulations – Project Topic Selection (Due Date)
	09/09	L3	AI and Law – Assignment 1 (Posted)
3	09/14	L4	Database Privacy: Anonymization and De-Identification Paradigm
	09/16	L5	Reconstruction Attack I
	09/17	-	Project Deliverable 0 (Due Date)
4	09/21	L6	Reconstruction Attack II
	09/23	L7	Differential Privacy Fundamentals I
	09/24	-	Assignment 1 (Due Date)
5	09/28	L8	Differential Privacy Fundamentals II – Assignment 2 (Posted)
	09/30	L9	Differential Privacy Fundamentals III
	10/01	-	Project Deliverable 1 (Due Date)
6	10/05	L10	Advanced Composition
	10/07	L11	Exponential Mechanism and Report Noisy Max I
7	10/12	-	Fall Break
	10/14	L12	Exponential Mechanism and Report Noisy Max II
8	10/19	L13	Approximate Differential Privacy I
	10/21	L14	Approximate Differential Privacy II
	10/22	-	Project Deliverable 2 (Due Date)
9	10/26	L15	Differentially Private Empirical Risk Minimization I
	10/28	L16	Differentially Private Empirical Risk Minimization II
10	11/02	L17	Private Mean Estimation
	11/04	L18	Local Differential Privacy
	11/05	-	Assignment 2 (Due Date)
11	11/09	L19	Learning with Privacy – Privacy Gradient Descent I
	11/11	-	Veteran Day – Assignment 3 (Posted)
12	11/16	L20	Learning with Privacy – Privacy Gradient Descent II
	11/18	L21	Differential Privacy in Industry I
	11/21	-	Discussion Report 3& 4
13	11/23	L22	Differential Privacy in Industry II
	11/25	-	Thanksgiving Break
	11/28	-	Project Deliverable 3 (Due Date)
14	11/30	L23	Advanced Research in DP I
	12/02	L24	Advanced Research in DP II
	12/05	-	Assignment 3 (Due Date)
15	12/07	P1	Differential Privacy in Industry III
	12/08	-	Project Presentations Slides and Videos
	12/09	P2	Project Presentations
	12/11	-	Discussion Report 5
	12/12	-	Project Deliverable 4 (Due Date)

Academic Honesty Statement:

Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source. Students committing or aiding in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University. Please see the University of Maine System's Academic Integrity Policy listed in the Board Policy Manual as Policy 314 (***Date Issued:** September 1, 2020): <https://www.maine.edu/board-of-trustees/policy-manual/section-314/>

COVID-19 Return:

To keep our campus safe, students are expected to comply with all University policies related to the COVID-19 pandemic. For the latest guidance, please visit <https://umaine.edu/return>

The website address could be, alternatively, the system one: <https://www.maine.edu/together/community-guidance/students/>

Students Accessibility Services Statement:

If you have a disability for which you may be requesting an accommodation, please contact Student Accessibility Services, 121 East Annex, 581.2319, as early as possible in the term. Students who have already been approved for accommodations by SAS and have a current accommodation letter should meet with me, Dr. Sepideh Ghanavati, privately as soon as possible.

Course Schedule Disclaimer (Disruption Clause):

In the event of an extended disruption of normal classroom activities (due to COVID-19 or other long-term disruptions), the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

UMaine Student Code of Conduct:

All students are expected to conform to [the UMaine Student Code of Conduct](#).

Classroom Civility:

Civility should be conveyed to all others through courteous expression, politeness, esteem and regard for others, and a general respect for others, regardless of differences from self.

Inclusive and Non-Sexist Language:

The University of Maine, as an equal opportunity educational institution, is committed to both academic freedom and the fair treatment of all individuals. It therefore discourages the use of sexist language. Language that reinforces sexism can arise from imprecise word choices that may be interpreted as biased, discriminatory, or demeaning even if they are not intended to be. Accordingly, all University communications, whether delivered orally or in writing, shall be free of sexist language.

This policy shall apply to all future University publications, whether produced through Public Affairs or elsewhere, that are intended for distribution to students, parents, faculty, staff, or other people interested in the University of Maine. University publications shall include, but not necessarily be limited to: University printing office publications; promotional materials distributed by all units of the University both academic and nonacademic; and policy booklets prepared for students and faculty. Inventory on hand of existing publications may be used until exhausted or a publication is revised.

Each member of the University community is urged to be sensitive to the impact of language and to make a personal commitment to eliminate sexist language. Supervisory personnel have a particular responsibility to

discuss this policy with faculty and staff and to make available to them guidelines on nonsexist language. Guidelines of the American Psychological Association on the use of nonsexist language provide direction and are recommended because they are brief and list examples, but others may be used. Consult the Communications and Marketing Department or Women's Gender and Sexuality Studies Program for alternatives (<https://umaine.edu/womensgenderandsexualitystudies/>) .

Observance of Religious Holidays/Events:

The University of Maine recognizes that when students are observing significant religious holidays, some may be unable to attend classes or labs, study, take tests, or work on other assignments. If they provide adequate notice (at least one week and longer if at all possible), these students are allowed to make up course requirements as long as this effort does not create an unreasonable burden upon the instructor, department or University. At the discretion of the instructor, such coursework could be due before or after the examination or assignment. No adverse or prejudicial effects shall result to a student's grade for the examination, study, or course requirement on the day of religious observance. The student shall not be marked absent from the class due to observing a significant religious holiday. In the case of an internship or clinical, students should refer to the applicable policy in place by the employer or site.

Sexual Discrimination Reporting:

The University of Maine is committed to making campus a safe place for students. Because of this commitment, if you tell a teacher about an experience of **sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct or any form of gender discrimination** involving members of the campus, **your teacher is required to report** this information to Title IX Student Services or the Office of Equal Opportunity.

If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources:

For *confidential resources on campus*: **Counseling Center: 207-581-1392** or **Cutler Health Center: at 207-581-4000**.

For *confidential resources off campus*: **Rape Response Services: 1-800-871-7741** or **Partners for Peace: 1-800-863-9909**.

Other resources: The resources listed below can offer support but may have to report the incident to others who can help:

For *support services on campus*: **Title IX Student Services: 207-581-1406, Office of Community Standards: 207-581-1409, University of Maine Police: 207-581-4040 or 911**. Or [see the OSAVP website for a complete list of services](#).

Copyright Notice for Materials Accessible through this Website

Most materials accessible through this site, such as linked articles, should be assumed to be copyright protected.

1. Unless the "fair use" provisions of copyright law apply or language is contained in a work permitting its use, permission should be obtained from the copyright holder for copying the work.
2. Use of the instructor prepared web pages and the slides affiliated with each lecture on the syllabus may be assumed to be controlled by the University of Maine System Broad Application Copyleft License (proposed, current, or future) or through a similar license that may be posted at the bottom of each web page.
3. All class videos (lectures) should be assumed to be copyright protected in accordance with the University of Maine System Statement of Policy Governing Patents and Copyrights.

Contingency Plans in the Event of an Epidemic:

In the event of an influenza or similar epidemic that precludes the ability to meet in face-to-face sessions, assume that the instructor will either (1) host the course on our usual zoom url for the class at the normal time and everyone will participate at a distance or (2) record a video of the lecture I would have otherwise presented in person and post it for viewing by downloading from the syllabus and/or from a web streaming video site (example: recorded on zoom or recorded and then posted on the Spatial Information Science and Engineering YouTube Channel). All other reading and module assignments should proceed as usual. If you yourself become sick, simply inform the instructor and the instructor will arrange appropriate extensions based on your particular circumstances.



THE UNIVERSITY OF
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Graduate School

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Graduate Course Modification

Academic Unit: Biology & Ecology

Course Designator & Number: PSE 509 Effective Semester: Spring 2023

Course Title: Experimental Design

Course Modification Type: Course Designator Change

Other Modification: _____

Current Catalog Description:

New Course Designator & Number: BIO 509 Credit Hours: _____

New Course Title: _____

New Course Prerequisites:

Current course prerequisites: N/A

Cross-Listed Course: _____

Course Instructor: Allison Gardner, Associate Professor (School of Biology and Ecology), 50% teaching appointment

New Catalog Description:

Reason for course modification:

This course has been instructed in SFA under the PSE designator previously. SFA and SBE have agreed for the course to be instructed in SBE in the future under the BIO designator.

Does this course addition require additional department or institutional facilities, support and/or resources, or library subscriptions and resources?

No. The academic unit will not request additional resources for this course

Additional Resources:

Course Frequency:

The course will be offered alternating years (odd springs) and will not result in overload salary payments.

Can this course be repeated for credit? _____

Total number of credits allowed: _____

Total number of completions allowed: _____

Can students enroll multiple times in a term? _____

Mode of Instruction: _____

Endorsements

Leader: farahad.dastoor@maine.edu Approved Date: 08/08/22

College CC Chair: _____ Date: _____

College Dean: susans@maine.edu Approved Date: 08/29/22

Leader: _____ Date: _____

College CC Chair: _____ Date: _____

College Dean: _____ Date: _____

DLL: _____ Date: _____

Graduate School

Date



5775 Stodder Hall
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Graduate Course Modification

Academic Unit: Business

Course Designator & Number: ACC 608 Effective Semester: Fall 2022

Course Title: Topics in Accounting

Course Modification Type: Course Repeat Change

Other Modification: _____

Current Catalog Description:

New Course Designator & Number: _____ Credit Hours: _____

New Course Title: _____

New Course Prerequisites:

Current course prerequisites: _____

Cross-Listed Course: _____

Course Instructor: Henri Akono - 2/3

New Catalog Description:

Reason for course modification:

This "Topics Course" represents a variety of offerings for the Accounting Concentration when courses are offered infrequently or for the one or two times the course is offered so a permanent course can be considered by the curriculum committee as designed.

Does this course addition require additional department or institutional facilities, support and/or resources, or library subscriptions and resources?

No. The academic unit will not request additional resources for this course

Additional Resources:

Course Frequency:

This will be taught once or twice per year and will not result in an overload pay during the term normally (except when taught in the summer).

Can this course be repeated for credit? Yes

Total number of credits allowed: 9

Total number of completions allowed: 3

Can students enroll multiple times in a term? Yes

Mode of Instruction:

Endorsements

Leader: jason.harkins@maine.edu Approved Date: 05/10/22

College CC Chair: sebastian.lobe@maine.edu Approved Date: 05/11/22

College Dean: norman.oreilly@maine.edu Approved Date: 05/12/22

Leader: Date:

College CC Chair: Date:

College Dean: Date:

DLL: brian.olsen@maine.edu Approved Date: 06/01/22


Graduate School

8 June 2022
Date



Graduate School

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umaine.edu/graduate
graduate@maine.edu
207.581.3291

Graduate Course Modification

Academic Unit: Business

Course Designator & Number: MBA 649 Effective Semester: Fall 2022

Course Title: Strategic Decision Making

Course Modification Type: Prerequisite Change

Other Modification: _____

Current Catalog Description:

MBA 649 - Strategic Decision Making

This capstone course studies administrative practices at the strategic level of business management. Develops administrative competence in the formulation of business policy at the decision-making level through case studies or practicums.

Prerequisites & Notes

MBA students only. Completion of all MBA core courses or permission.

Credits: 3

New Course Designator & Number: _____ Credit Hours: _____

New Course Title: _____

New Course Prerequisites:

Department Permission

Current course prerequisites: MBA Students only. Completion of all MBA Core courses or permission

Cross-Listed Course: _____

Course Instructor: Nadège Levallet

New Catalog Description:

Reason for course modification:

This course is expected to be taken in the final semester (ideally as the final course) of the pursuit of an MBA degree. As students in the MBA are enrolling themselves in courses now, we need to make sure that they are enrolling in this course at the appropriate time.

Does this course addition require additional department or institutional facilities, support and/or resources, or library subscriptions and resources?

No. The academic unit will not request additional resources for this course

Additional Resources:

Course Frequency:

Each term this course is offered in load (with the exception of the summer session when it is taught as an overload).

Can this course be repeated for credit? _____

Total number of credits allowed: _____

Total number of completions allowed: _____

Can students enroll multiple times in a term? _____

Mode of Instruction: _____

Endorsements

Leader: jason.harkins@maine.edu Approved Date: 05/09/22

College CC Chair: sebastian.lobe@maine.edu Approved Date: 05/09/22

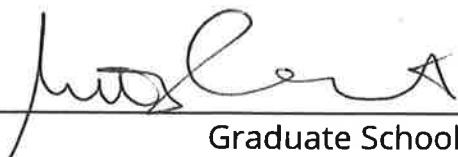
College Dean: norman.oreilly@maine.edu Approved Date: 05/10/22

Leader: _____ Date: _____

College CC Chair: _____ Date: _____

College Dean: _____ Date: _____

DLL: _____ Date: _____



Graduate School

8 June 2022

Date