University of North Carolina at Charlotte
College of Computing and Informatics
Department of Computer Science

ITIS 6336/8336 and DSBA 6010

Software Engineering for AI-Enabled Systems

(Fall 2026)

Course Schedule

The following table provides an outline for the topics and activities that will be delivered during each module for this course. Any changes on the given dates will be updated accordingly and announced on Canvas.

Calendar	Topic	Activities and Submissions
Week 1 (8/17)	**Syllabus and Overview of Software Engineering for AI** • Syllabus Overview and Introduction • Lecture 1: Software Engineering for AI	• **Group Project Member List (in-class): Due (8/17)** • **Paper Reading Selections List** • **Optional Reading**: **How to Read a Paper**
Week 2 (8/24)	**Software Requirements and Model Quality** • Lecture 2: Requirements Gathering for AI • Lecture 3: Quality Requirements for AI	• Paper Presentation Date Selection (In Class) • In-Class Team Project Discussions (After Meeting with the TA)
Week 3 (8/31)	**Data Cleaning, Processing, Drift & Management for AI** • Lecture 4: Data Quality, Processing and Development	• **Project (Deliverable-1)-GitHub Setup (Due 8/30)**
Week 4 (9/7)	**Labor Day – No Classes**	
Week 5 (9/14)	**AI Model Development with ML, DL, and LLM Focus** • Lecture 5: Feature Engineering with ML and DL Focus • Lecture 6: Feature Engineering with LLM Focus	• **Project (Deliverable-2) Project Proposal (Due: 9/13)** • **Group Project Proposal Presentations (in-class)**

Week 6 (9/21)	**AI Model Development-DL Learning Types** • Lecture 7: Model Development with ML & DL-Sup./Usup. Learning • Lecture 8: Model Development with DL-Reinforcement Learning	• **Project (Deliverable-3)-Data Collection & Clean. (Due: 9/20)**
Week 7 (9/28)	**Engineering LLMs From Massive Pretraining to Autonomous Agents** • Lecture 9: The Modern AI Development Pipeline	• **Reading Assignment-1 (Paper 1) (Due: 9/27)** • **Group Presentation Assignment-1 (Paper 1) (in-class)**
Week 8 (10/5)	**From Models to AI-Enabled Systems** • Lecture 10: Transition from Models to AI-Enabled Systems	• **Project (Deliverable-4)-Data Labeling (Due: 10/4)**
Week 9 (10/12)	**Student Recess – No Classes**	
Week 10 (10/19)	**Quality Metrics and Measures for AI** • Lecture 11: Model Quality vs. System Quality • Lecture 12: Quality Metrics and Measures for AI-Enabled Systems	• **Reading Assignment-2 (Paper 2) (Due: 10/18)** • **Group Presentation Assignment-2 (Paper 2) (in-class)**
Week 11 (10/26)	**Model Tradeoffs and Risks in AI** • Lecture 13: Tradeoffs among Modeling Techniques • Lecture 14: Model Risks and Planning for Mistakes	
Week 12 (11/2)	**Software Architecture of AI** • Lecture 15: Software Architecture of AI-Enabled Systems	• **Reading Assignment-3 (Paper 3) (Due: 11/1)** • **Group Presentation Assignment-3 (Paper 3) (in-class)**
Week 13 (11/9)	**Architecting Modern AI Search** • Lecture 16: Looking Inside LLMs • Lecture 17: Prompt Engineering • Lecture 18: From Dense Retrieval to RAG	
Week 14 (11/16)	**Data Version Control and Data Provenance for AI** • Lecture 19: Version Control, Data Provenance & Reproducibility	• **Reading Assignment-4 (Due: 11/15)** • **Group Presentation Assignment-4 (Paper 4) (in-class)**
Week 15 (11/23)	**Explainability and Interpretability of AI** • Lecture 20: Explainability & Interpretability of AI-Enabled Systems	

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Week 16 (11/30)	**Software Testing for ML Model Quality and Development** • Lecture 21: Invariant Testing and Model Evaluation • Lecture 22-ML Pipeline Testing, Deployment, and Monitoring	• **Project (Deliverable-5)-Feature Engineering, Model Training and Model Evaluation (Due: 11/29)**
Week 17 (12/7)	**Final Group Project Presentations:** ▸ **(In-class: 12/7) from 5:30 PM-7:30 PM** **Final Power-Point Presentation Slides:** ▸ **Due: (12/6) @ 11:59 PM via Canvas**	**Optional Reading**: ▸ **How to Write Your First Research Paper** ▸ **Writing Good Software Engineering Research Papers** **Final Report Submission:** ▸ **Project (Deliverable-6)-Final Report** ▸ **Due: (12/7) @ 11:59PM via Canvas**

Dates to Note:

- 9/7 – Labor Day (No Classes)
- 10/12 to 10/13 – Student Recess (No Classes)
- 11/11 – Veteran's Day (No Classes)
- 11/25 to 11/28 – Thanksgiving Break
- 12/2 – Last Day of Classes
- 12/3 – Reading Day (i.e., this is your day to study and prepare for your exams)