
- Week 1: Orientation and University Policies 📚
  - Learning Outcomes:
  - Topics Covered (2 hours):
  - Activities:
  - Assessment:
- Week 2-3: Introduction to Machine Learning 🤖
  - Learning Outcomes:
  - Topics Covered (4 hours):
  - Activities:
  - Assessment:
- Week 4: Python Data Structures 📊
  - Learning Outcomes:
  - Topics Covered (2 hours):
  - Activities:
  - Assessment:
- Week 5-7: Data Cleaning & Preprocessing 🛠️
  - Learning Outcomes:
  - Topics Covered (6 hours):
  - Activities:
  - Assessment:
- Week 8: Midterm Project 🎯
  - Learning Outcomes:
  - Topics Covered (2 hours):
  - Activities:
  - Assessment:
- Week 9: Midterm Exam 📝
  - Assessment:
- Week 10-14: Machine Learning Model Development 🏗️
  - Learning Outcomes:
  - Topics Covered (10 hours):
  - Activities:
  - Assessment:
- Week 15-17: Final Project 🎓

Week 1: Orientation and University Policies 📚

Learning Outcomes:

- Understand and appreciate WMSU's Vision, Mission, Goals, and Policies.
- Demonstrate knowledge of classroom policies, grading system, and expectations.
- Recognize the importance of sustainable development goals in computing.

Topics Covered (2 hours):

✅ WMSU VMGO and Classroom Policies ✅ Course Overview, Requirements, and Grading System ✅ Expectations Survey ✅ Sustainable Development Goals ✅ Course Syllabus

Activities:

🗣️ Discussion & Orientation - Understanding policies and course structure 📋 Expectation Survey - Students' views on self, classmates, instructor, and subject 🏠 Assignment - Reflect on how computing solutions address national goals

Assessment:

✔️ Rubric-based participation score ✔️ Word cloud generation using mentimeter.com or meta cards

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Week 2-3: Introduction to Machine Learning 🤖

Learning Outcomes:

- Define key terminologies in Machine Learning & Data Science.
- Differentiate types of analytics & machine learning tasks.
- Understand the machine learning workflow and data mining frameworks.
- Explore Python as a programming language for AI & ML.

Topics Covered (4 hours):

✅ Machine Learning Terminologies ✅ Data-Value Chain ✅ Types of Analytics & Machine Learning Algorithms ✅ Machine Learning Workflow ✅ Python Basics: Variables, Operators, Conditional Statements, Loops, Functions

Activities:

📖 Lecture & Discussion - Fundamentals of ML & Python 📝 Hands-on Activities - Coding basic Python scripts 📝 Written Quiz - ML & Python fundamentals

Assessment:

✔️ Rubric-based class participation ✔️ Quiz results

Week 4: Python Data Structures 📊

Learning Outcomes:

- Demonstrate knowledge of Python data structures (lists, sets, dictionaries, tuples, etc.).
- Use Pandas and Numpy for data manipulation.
- Integrate Python data structures in web applications.

Topics Covered (2 hours):

✅ Python Data Structures: Lists, Tuples, Dictionaries, Sets ✅ Pandas & Numpy Libraries and Documentation ✅ Pandas & Numpy Functions

Activities:

🎓 Lecture & Discussion - Understanding data structures 🖥️ Demonstration - Practical application of Pandas & Numpy 🏡 Assignment

- Exercises on data structures

Assessment:

✔ Rubric-based activity evaluation

Week 5-7: Data Cleaning & Preprocessing 🛠

Learning Outcomes:

- Clean and preprocess datasets for analysis.
- Summarize and visualize data effectively.

Topics Covered (6 hours):

✅ Data Cleaning Techniques: Filtering, Sorting, Null & Outlier Treatment ✅ Categorical Encoding & Feature Selection ✅ Data Visualization using Matplotlib, Seaborn, and Plotly

Activities:

📖 Lecture & Discussion - Techniques in data preparation 🛠 Hands-on Exercises - Implementing data preprocessing techniques 📝 Written Quiz - Testing understanding of data preparation methods

Assessment:

✔ Rubric-based activity evaluation ✔ Quiz results

Week 8: Midterm Project 🎯

Learning Outcomes:

- Apply data cleaning and preprocessing on a selected dataset.
- Present summary statistics and visualizations using Django.

Topics Covered (2 hours):

✅ Presentation of Preprocessed Datasets ✅ Integration with Django Framework

Activities:

📊 Project Presentation - Showcase dataset cleaning & preprocessing

Assessment:

✔️ Rubric-based project evaluation

Week 9: Midterm Exam 📝

Assessment:

✔️ Midterm Written Exam

Week 10-14: Machine Learning Model Development 🏗️

Learning Outcomes:

- Differentiate classification vs regression and supervised vs unsupervised learning.
- Address dataset imbalances and train/test data splitting.
- Implement performance metrics and hyperparameter tuning.
- Deploy models using Django/Flask.

Topics Covered (10 hours):

✅ Classification vs Regression; Supervised vs Unsupervised Learning ✅ Train-Test Split, Cross-Validation ✅ Performance Metrics, Overfitting & Underfitting ✅ Hyperparameter Tuning ✅ Deployment using Django/Flask

Activities:

🗣️ Discussion & Demonstration - Understanding ML modeling 🖥️ Hands-on Activities - Implementing model training & evaluation 📝 Quizzes & Assignments - Testing understanding of ML concepts

Assessment:

✔ Rubric-based activity evaluation ✔ Quiz results ✔ Hands-on project evaluation

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Week 15-17: Final Project 🎓

Learning Outcomes:

- Collaborate on a final project demonstrating ML implementation.
- Create a video demo showcasing project execution.
- Present and defend the project.

Topics Covered (6 hours):

✅ Final Project Development ✅ Dataset Integration & Preprocessing ✅ Web Deployment & Presentation

Activities:

🤝 Weekly Progress Consultation - Monitoring project development 📽️ Final Project Presentation & Video Demo - Demonstrating project

Assessment:

✔ Consultation records ✔ Progress reports ✔ Rubric-based project evaluation

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Week 18: Final Exam 📜

Assessment:

✔ Final Written Exam

Key Values Integrated Throughout the Course 🌟

💡 Attentiveness & Curiosity - Learning new technologies 💪 Perseverance & Patience - Debugging and improving code 🎨 Creativity & Critical Thinking - Problem-solving through innovation 🤝 Teamwork & Collaboration - Working effectively in groups 📈 Integrity & Self-Reliance - Upholding academic honesty

This document serves as a detailed course guide to help students navigate through CC105 effectively. 🚀