OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: May 2014
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: May 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

COMP 381	Computer Information Systems	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Introduction to Machine Learning
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course introduces techniques on how to program computers to learn over time. Machine learning creates software programs that are more flexible and tailored to the user. Applications range from simple spam detection systems, to websites that learn about customer preferences, to complex speech recognition systems. This course emphasizes the actual programming techniques needed to implement machine learning, rather than a purely theoretical and mathematical overview.

PREREQUISITES: COMP 251 with a C or better; STAT 106 is recommended.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 45

STRUCTURE OF HOURS:

Lectures:	30	Hrs
Seminar:		Hrs
Laboratory:	15	Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **35**
Expected frequency of course offerings: **Every other year**
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Gabriel Murray**

Department Head:	**Dan Harris**	Date approved:	**October 12, 2012**
Campus-Wide Consultation (CWC)		Date of meeting:	**August 30, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**September 20, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**September 20, 2013**
Undergraduate Education (UEC) approval		Date of meeting:	**October 25, 2013**

LEARNING OUTCOMES:

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

- Systematically explore large amounts of data.
- Implement their own classification, regression, and clustering models.
- Implement a simple recommendation system.
- Evaluate machine learning performance.
- Use existing machine learning toolkits.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures, Labs, Assignments, and Guest Speakers

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☒ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Machine Learning for Hackers, Drew Conway and John Myles White
Programming Collective Intelligence, Toby Segaran
Data Mining: Practical Machine Learning Tools and Techniques, Ian Witten and Eibe Frank
Machine Learning in Action, Peter Harrington

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 15%
Term project: 35%
Midterm exam: 15%
Final exam: 35%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Linear regression
- Logistic regression
- Regularization
- Neural networks
- Support vector machines
- Clustering
- Recommender systems
- Hadoop and Mahout