

ITP 350: Technologies and Practices for Analytics

Units: 4

**SAMPLE SYLLABUS, WILL BE
UPDATED FOR SPRING 2019**



Course Description

Overview of the process of data analysis. Reporting, visualization and prediction. Practical applications of analytics through case studies. Data analytics have moved out of the academic world of statisticians to the practical world of technology. A variety of user friendly technologies bring powerful analytical capabilities to end users. Three major areas that comprise analytics are reporting, visualization and prediction. This course uses the latest in technology to show the practice of data analytics in the real world.

Learning Objectives

“Big Data” analytics has become a highly sought after skill in business, engineering, services, science, health and other industries. This course will explore the technology and practice data of analytics.

After completing the course, students will be able to

- Analyze data to generate information and knowledge that lead to informed decisions for businesses
- Author enterprise dashboards that are used to summarize and visualize data in a way that supports insight into trends. Also the ability to perform “what-if” analysis in real time.
- Show how business intelligence can be derived from data warehouses
- Create standard reports for business users
- Derive insightful trends using data mining techniques
- Apply the latest in analytics technology in real world case studies in the areas of business, entertainment and climate change

Lecture

Section 1: 12 – 1:50 pm TTh, OHE 540

Section 2: 4 -5:50 pm TTh , KAP 163

Instructor

Name: Nitin Kalé

Office: OHE 412

Office Hours: 9:45 a.m. – 11:45 a.m. MW

Contact Info: kale@usc.edu

Teaching Assistant(s)

Section 1: Rachel Longjohn, rlongjoh@usc.edu

Section 2: Ryan Chua, ryankenc@usc.edu

IT Help

IT help will be provided by Viterbi IT

Hours of Service: 8am – 5pm M-F

Contact Info: <http://viterbi.usc.edu/servicedesk> , 213-740-0517, engrhelp@usc.edu

Prerequisites

ITP 250 and ITP 251

Course Notes

All course materials will be made available through Blackboard. Blackboard discussion forums will be used for out-of-class discussions. Lectures are delivered face to face in classroom.

Technology Proficiency and Hardware/Software Required

Students can use their own computers or login to the Viterbi Virtual Lab. Most of the SAP software required for the class is **Windows** based. The software will be provisioned through the Viterbi Virtual Lab. Specifically, you will be using

- SAP GUI 7.50 for Windows
- SAP Business Explorer Query Designer
- SAP BusinessObjects Analysis
- SAP BusinessObjects Design Studio
- SAP Predictive Analytics
- SAP Crystal Reports
- SAP Analytics Cloud
- Tableau
- Microsoft Excel and Access
- Teradata

Required Reading

Practical Analytics, Nitin Kale and Nancy Jones, First Edition, Epistemy Press 2016

<http://store.epistemypress.com/books/analytics.html>

A discount code will be given to students during lecture.

Description and Assessment of Assignments

Homework – Most homework is computer based. Homework should be turned in to Blackboard on time. Grading will be based on completeness, accuracy, and correctness. Feedback will be provided through Blackboard.

Exams – are written, in-class tests. They are based on concepts and not on particular tools.

Grading Breakdown

The weight of graded material during the semester is listed below.

No extra credit assignments will be offered.

Homework	30%
Final Project	10%
Exam I	30%
Exam II	30%
Total	100%

Grading Scale

The following shows the grading scale to be used to determine the final letter grade. ***No extra credit assignments will be offered.***

A	100-95
A-	95-92
B+	92-89
B	89-86
B-	86-83
C+	83-80
C	80-77
C-	77-74
D+	74-71
D	71-68
D-	68-65
F	65 or below

Assignment Submission Policies

It is the responsibility of the student to make sure case studies and assignment are turned in on time. Make sure you follow the procedures outlined in each assignment or case study (Blackboard submissions). Late assignment submissions will be subject to a late penalty of 25% per day. No assignments will be accepted later than four days from the due date.

Additional Policies

No make-up exams (except for documented medical or family emergencies) will be offered nor will there be any changes made to the Final Exam schedule, except as permitted by university rules.

Lecture attendance is not mandatory however it is recommended that students not miss any lecture.

Technologies and Practices for Analytics

ITP350 (4 units)

Course Outline

Week of Aug 20– Course Introduction

- Course objectives and outcomes
- Making the case for analytics

Reading: *Online readings will be provided.*

Assignment: None

Week 2 of Aug 27 – Types of data for analytics

- Structured, unstructured
- Selecting data for analytics
- Staging data

Reading: *Online readings will be provided*

Assignment: Explore various data sources – flat files, relational database, data warehouse, in-memory database, XML

Due Date: Week 3

Week 3 of Sept 3 – Overview of technologies for analytics

- Reporting
- Data Visualization
- Prediction

Reading: *Online readings will be provided*

Assignment: Connect front end tools to back end databases. Utilize ODBC and other middleware to make such connections. Explore user authorization and security.

Due Date: Week 4

Week 4 of Sept 10– Slicing and Dicing

- Basics of data analysis
- Working with aggregates, hierarchies
- Exceptions and conditions

Reading: *Online readings will be provided*

Assignment: Answer business questions by slicing and dicing multidimensional data from a data warehouse data source.

Due Date: Week 5

Week 5 of Sept 17 – Reporting

- Building reports from one or more data sources
- Formatting reports
 - Grouping
 - Sectioning
 - Graphics and charting
- Creating summaries
 - Aggregates
 - Hierarchies

Reading: *Online readings will be provided*

Assignment: Use SAP Crystal Reports to connect to a data warehouse, then author a monthly report that show the accounts receivables from customers.

Due Date: Week 6

Week 6 of Sept 24 - Data Visualization: Charting

- Types of charts
- How to choose the right chart for displaying data
- Multi variable data display

Reading: *Online readings will be provided*

Assignment: Use various charts to display insights from large data sets.

Due Date: Week 7

Week 7 of Oct 1 – Data Visualization: Dashboards

- What are dashboards, cockpits, scorecards?
- How to author dashboards?
- Adding interactivity
- Deploying dashboards

Reading: *Online readings will be provided*

Assignment: Model and implement a dashboard for key performance indicators for a company.

Due Date: Week 8

Week 8 of Oct 8 – Data Visualization: Mobile Apps for Analytics

- Authoring apps
- Deploying apps

Reading: *Online readings will be provided*

Assignment: Build an analytics mobile app based on data from a data warehouse. Test it on your mobile device.

Due Date: Week 9

Oct 16 - Midterm Exam

Week 10 of Oct 22 – Data Visualization: InfoGraphics

- What are InfoGraphics?
- How to tell a data driven story

Reading: *Online readings will be provided*

Assignment: Build an infographic based on data of your choice. Infographic should communicate findings in a compelling way.

Due Date: Week 11

Week 11 of Oct 29 – Data mining

- Descriptive analytics
- Predictive analytics
- Prescriptive analytics

Reading: *Online readings will be provided*

Assignment: Use SAP Predictive analysis to analyze four different scenarios – Titanic disaster, preventative machine maintenance, climate temperature for the past 150 years, store employee turnover

Due Date: Week 12

Week 12 of Nov 5 – Data Mining contd.

Week 13 of Nov 12 – Big data: Hype or helpful?

- What is big data?
- Challenges and promises of big data
- Limitations and missteps of big data
- Introduction to Case studies

Reading: *Online readings will be provided*

Assignment: Analyze the multi billion row database from Walmart provisioned by University of Arkansas

Due Date: Week 13

Week 14 of Nov 19 – Final Project

Week 15 of Nov 26 – Exam II

Week 16 of Dec 3– Final Project submission

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

<https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

The Office of Disability Services and Programs

Provides certification for students with disabilities and helps arrange relevant accommodations. <http://dsp.usc.edu>

Student Support and Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

Diversity at USC

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. <https://diversity.usc.edu/>

USC Emergency Information

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, <http://emergency.usc.edu>

USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.

Provides overall safety to USC community. <http://dps.usc.edu>