# Analytics Tech Consulting Course
# Mgmt 290

4.0 Units
Summer 2021

## Class Meeting Information

10 weeks Tuesdays (0330P-0620P)

## Instructor Information

Dr. Arvind Sathi *Email:* asathi@uci.edu

Dr. Arvind Sathi is the Director of AI Literacy at KPMG and a faculty member with University of California where he teaches courses on AI and Analytics. Dr. Sathi received his Ph.D. in Artificial Intelligence from Carnegie Mellon University and worked under Nobel Prize-winner Dr. Herbert A. Simon. Dr. Sathi is a seasoned professional with leadership in Artificial Intelligence and Data Science solution development and delivery. He has published four books on analytics - Cognitive (Internet of) Things, Engaging Customers Using Big Data, Big Data Analytics, Customer Experience Analytics.

Neena Sathi, *Email:* nsathi@aaii.ai

Ms. Neena Sathi is a Principal at Applied AI Institute and is developing online courses in analytical and AI courses. Prior to that, she worked at KPMG, IBM, Accenture and Level3/CenturyLink with specialization in developing AI and analytics solutions associated with enhancing customer experience, back-office automation and risk and compliance. Ms. Sathi is Master certified integration architect from IBM and Open Group, Microsoft Azure Cloud certified as well as certified Project management professional (PMP) from Project management institute. She has authored 6 video books on Artificial Intelligence with Springer Nature.

## Course Description

Digital customer channels are maturing in providing personalized customer facing functions, such as advertising, sales, ordering, and product use. Social engagement is a predominant way for influencing customers and creating buzz. AI techniques are providing more human touch, even when dealing with software agents. The success of new customer engagement is heavily due to advanced analytics capabilities to drive personalized communication to each customer or micro segment. There is a tremendous need in organizations to establish programs for AI and Analytics.

The course brings you to a consulting environment, where you will learn how to be an AI consultant

in a project setting. Using our consulting experiences from top tier AI consultancies, we bring the use cases, data and first-hand exposure to consulting. We will teach you the AI consulting techniques and use a consulting project to give you hands-on experience in solving a real-life business problem.

**Prerequisites — Classes or Knowledge Required Before Taking This Course**

Some experience with business/data analytics is helpful but not required. A set of whitepapers will be provided as pre-reading material.

**Course Objectives**

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

- Articulate the AI consulting process
- Understand how to develop a use case and benefit case
- Identify data sources they can use for AI consulting
- Get familiarity with AI and Analytics techniques – Advanced Machine Learning, Natural Language Processing, Computer Vision, Graph Intelligence, and Conversational AI.
- Understand how to use analytics to drive personalization in a digital engagement

## Course Material

We will share a number of video books on AI related topics. For a preview, please see https://www.youtube.com/channel/UC6tbScNwe-G5MIwmkabsXNw

## Evaluation and Grading

Evaluation of Student Performance Weighted as Percentages of the Total Grade

| | |
|---|---|
| Class Participation | 10% |
| Quiz | 20% |
| Homework #1 | 20% |
| Homework #2 | 20% |
| Group Project | 30% |
| | 100% |

## Class Project

Students will form teams to work on a real-world consulting engagement project. The teams will define the opportunity, establish the goals, incorporate Analytics and AI engagement models into the solution, and develop solutions. The teams will present their work during the last week of class.

## Code of Conduct

All participants in the course are bound by the University of California Code of Conduct, found at http://www.ucop.edu/ucophome/coordrev/ucpolicies/aos/uc100.html.

## Academic Honesty Policy

The University is an institution of learning, research, and scholarship predicated on the existence of an environment of honesty and integrity. As members of the academic community, faculty, students, and administrative officials share responsibility for maintaining this environment. It is essential that all members of the academic community subscribe to the ideal of academic honesty and integrity and accept individual responsibilityfor their work. Academic dishonesty is unacceptable and will not be tolerated at the University of California, Irvine. Cheating, forgery, dishonest conduct, plagiarism, and collusion in dishonest activities erode the University's educational, research, and social roles.

If students who knowingly or intentionally conduct or help another student perform dishonest conduct, acts of cheating, or plagiarism will be subject to disciplinary action at thediscretion of UC Irvine Extension.

## Course Outline

### Week 1 – Course Introduction and Project Team Formation

- Course Overview
- Definitions
- Use Case Examples
- What catches the imagination?
- Project Use Cases
- Team Composition
- Team Assignment
- Assignment 1

### Week 2 – Data Sources and Use Case Creation

- Use Case Design Case Study
- Data Sources
    - Data Source Classification
    - Examples
- Use Case Creation
    - Design Thinking
    - User Personas
    - Day-in-life

### Week 3 – Introduction to Analytics Platforms and Assignment Presentations

- Analytics Platforms
    - Cloud vs On Premises
    - Major Platforms
    - Specialized Platforms
    - Open-Sourced
- Solution Architecture
    - Data Science Platform
    - Cloud Object Storage
    - Connectivity with Data Sources
    - Expert Interaction
    - Presentation and API connectivity to Destinations

### Week 4 –Business Case, Phasing, MVP

- Account Management Case Study
- Business Case Development
    - Classical Models
    - Alignment with Strategic Plans
    - Competitive Differentiation
    - Innovation
    - Risk Management
    - ESG

    - Quantitative vs Qualitative
- Phasing and MVP
    - Journey Maps
    - Phases and Hills
    - MVP

**Week 5 – Natural Language Processing and Mid-Term Quiz**

- Natural Language Processing
    - Challenges
    - Classification
    - Extraction
    - Semantic Parsing
- IBM Tools
    - Natural Language Classification
    - Natural Language Understanding
    - Watson Knowledge Studio
- Google Tools
    - Google ML
    - BERT
    - Tensorflow
    - Google Translate
- Open Sourced
    - Tesseract
    - SpaCy
- Mid-term Quiz

**Week 6 – Organizational Stakeholders and Secondary Users**

- Health Care Case Study
- Organizational Stakeholders
    - End Users
    - Technical Buyers
    - Economic Buyers
    - Secondary Users
    - Coaches
- Monetization Framework
- Monetization patterns

**Week 7 – Statistical and Graph Analysis**

- Assignment 2 Presentations
- Statistical Analysis
    - Feature Engineering
    - Location Analysis
    - Machine Learning
    - Deep Learning
    - Model Evaluation
- Graph Analysis
    - Graph Intelligence
    - Knowledge Graph
    - Graph Visualization
    - Use Cases

**Week 8 – Computer Vision and Case Study**

- Computer Vision Case Study
- Computer Vision Overview
- Scene Analysis
    - Inventory
    - People
- Business Documents
    - Forms
    - Invoices & Receipts
    - Checks & Driver Licenses
    - Embedded tables

**Week 9 – Conversational AI**

- Hotel Concierge Case Study
- What is Conversational AI
- Key concepts
    - Intents
    - Entities
    - Dialog
    - Context
    - Strategy
    - Pychology
- Conversational AI Maturity Levels
- Class Feedback

**Week 10 – Final Project Presentations**

- Class project presentations