Department of Technology Management and Innovation
MG-GY 6343 Human Capital Engineering & Analytics
Fall 2019

Professor: Vincent A. Conte, PhD

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Office/Hours: By Appointment
5 MetroTech Center, LC401

Class Schedule: Monday 8:30pm to 10pm

Course Pre-requisites: Graduate Standing

Course Description:

This course examines and applies the valuation and management of intangible assets in designing and managing post-industrial organizations. As organizations increasingly rely on technology to produce value, these technological solutions require interactions with other forms of value creation like Human Capital Management, Intellectual Property development and Organization Culture. The first part of the course focuses on human capital engineering using an interdisciplinary approach, drawing on diverse fields including industrial-organizational psychology, industrial engineering, economics and artificial intelligence to create a holistic view of how work in its various forms creates value. The second part of the course addresses people analytics, providing the student with a knowledge and understanding of current best practices, issues, and decision points in building an effective human capital analytic program. This part of the course will also focus on data structure and design to enable automation and predictive modeling and will place an emphasis on technology-enabled reporting.

Course Objective:

By the end of the course, students should:

- Have awareness and understanding of how to apply Human Capital Theory to HR Management, Industrial Engineering and related fields to building a Human Capital Strategy
- Understand the dynamics of labor economics, technology/social change, intellectual property rights and human capital engineering as they impact the design of jobs and work.
- Demonstrate an understanding of how analytics are applied to human capital and used to make decisions.
- Demonstrate an understanding of how to design a data infrastructure to support a specific

analytic strategy.

- Identify and select data dashboard designs that enable leadership use and support balancing a user-friendly approach with data accuracy and completeness.
- Identify standard Key Performance Indicators often used in HR scorecards and measurement.
- Demonstrate an understanding of the types of human capital data that exist and the analytic options that are commonly used.
- Develop a working knowledge in the area through focused projects, presentations, and individual assignments

Course Structure:

Since the first part of this course investigates new and cutting-edge theories and their application, it will be structured more as a research tutorial to facilitate individual student's exploration. Lectures and on-line experiences will be used to develop an understanding of the topic and a basic toolkit for strategic analysis and human capital valuation. These tools (e.g. Strategy Map, Competency Model, HR Scorecard) will be applied to a case of the student's own choosing and form the basis of a Human Capital Strategy which will become the basis for the Analytics part of the course.

The second part of the course will be conducted in a seminar style to develop students' abilities in the area of human capital analytics. Building on the first half of the course, students will receive instructions and templates for designing a Human Capital scorecard (KPI's), a data structure and a HC dashboard. Each student will be expected to deliver an oral and visual presentation of a data dashboard in addition to a detailed final paper tying together all the deliverables in the course.

Most of the course content will be delivered through Classes but students will be given an opportunity to interact with the Instructor through weekly scheduled WebEx sessions which will begin on Monday, Sept. 11th at 8:30 pm.

Readings:

Required Text(s):

- Alan Burton-Jones, J.-C Spender (2011) The Oxford Handbook of Human Capital, Oxford University Press, Inc., New York. (Available on-line through the NYU Library)

- Robert S. Kaplan and David P. Norton (2004). Strategy Maps: Converting Intangible Assets into Tangible Outcomes. Harvard Business Press.

- Lyle M. Spencer, Jr. and Signe M. Spencer (1993) "Competence at Work: Models for Superior Performance." Wiley & Sons, Inc. ISBN 0-471-54809-X

- Anil K. Gupta, Toshiro Wakayama, and U. Srinivasa Rangan (2012). "Global Strategies for Emerging Asia." Jossey Bass, San Francisco. ISBN 978-1-118-21797-9

- Erik Brynjolfsson and Andrew McAfee, (2011) "Race Against the Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy" Digital Frontier Press, Lexington, MA.

- Pease,G., Byerly, B. & Fitz-enz, J. (2013). "Human Capital Analytics" Hoboken, NJ: Wiley

Optional Text(s):

- Davenport, T.H. (2012). Enterprise Analytics: Optimize Performance, Process, and Decisions through Big Data. Upper Saddle River, NJ: FT Press.

- Ulrich, D., Huselid, M.A., Becker, B.E. (2001). The HR Scorecard: Linking People, Strategy, and Performance. Boston, MA: Harvard Business School Press.

- *Other readings will be distributed in class or through Blackboard*

Course Assignments and Grading:

Grades in the first part of this course will be based on the quality and amount of participation, as well as the successful completion of assignments and tests. The weighting each component of the final grade is approximately as follows:

Participation and Graded Assignments/Activities	**Percent**
Graded assignments, including: Human Capital Strategy Map, Competency Model, Human Capital Scorecard, and Dashboard Design.	50%
Exams/Quizzes (Mid-term and Final)	20%
Class Participation	10%
Final Paper	20%
Total	100%

Major Assignments:

Strategy Map *(20 points):* Following the models and cases in the Kaplan and Norton text, students will select a case organization (an existing organization they have worked for or one featured in journal articles or business news (e.g. Microsoft, Apple, Google, Uber) and complete the Strategy Map template provided.

Competency Model *(10 points)***:** Continuing to use the output from their Strategy Map, students will select a strategic job family and create a Competency Model as specified in the Spencer and Spencer text. A template will be provided on-line to guide the creation of the model.

HC Scorecard *(10 points)***:** Based on the information created through the Strategy Map and Competency Model, students will design a set of Human Capital KPI's for measuring the HC Assets and Strategic Readiness of the case organization.

Dashboard Design *(10 points)*: Students will mock up the elements of a HR leadership dashboard focusing on a simple design that presents Key Performance Indicators (KPIs)

Final Paper *(20 points)*: Students will prepare a 7-10page paper explaining the strategic details and metric choices, analytics used to deliver any inferential statistics, design choices, and measurement choices.

Course Topic Outline

Session	Topics
Module 1 Week of Sept 4th No WebEx session this week	**OVERVIEW AND INTRODUCTION TO HC** · Historical Perspective on Human Capital Theory · Application to Human Resources Strategy · Emerging issues of Human/Technology Integration · Intellectual Property rights and Developing Economies **Readings:** Blair, M.M. An Economic Perspective on the Notion of "Human Capital" in the Oxford Handbook of Human Capital. (Chapter 1)
Module 2 Week of Sept 11th WebEx session #1 Sept 11th	**USING THE STRATEGY MAP TO INVENTORY AND/OR DESIGN INTANGIBLE ASSETS** • Which intangible assets are required by the Organization's Strategy? • How can these assets be defined in terms of human labor? • How can these assets be defined in terms of technology? • How do the interactions of human labor and technology enhance the organization's outputs and market valuation? **Readings:** Kaplan and Norton Text Part II: Intangible Assets, pp. 199-275
Module 3 Week of Sept 18th WebEx session #2 Sept 18th	**DEFINING, DESIGNING AND ENHANCING HUMAN CAPABILITIES** · New Competency Models for the Post-Industrial Era · Changes in Performance and Reward Practices in the new work paradigm. · Exploring the outer reaches of Human Potential in high tech and data rich environments. · How engineers build Human Capability into machines and the state of the art in emulating human performance through machines. **Readings:** Spencer, L.M. Jr., and Spencer, S.M. "Competence at Work," Part I, and Part II.
Module 4 Week of Sept 25th WebEx session #3 Sept 25th	**CULTURE, EMPLOYEE TURNOVER, UNDERSTANDING WHAT THEY WANT AND WHY THEY LEAVE** • CHANGES IN THE EMPLOYEE/EMPLOYER CONTRACT? • USING SURVEYS, REGRESSION & PATH ANALYSES TO DEFINE CAUSE-EFFECT RELATIONSHIPS • HOW DO ORGANIZATION AND NATIONAL CULTURES CONTRIBUTE TO OR DETRACT FROM HUMAN CAPITAL? • DO ROBOTS BECOME PART OF THE CULTURE? **READINGS:** NG, K.Y., TAN, M.L. AND ANG, S. GLOBAL CULTURE CAPITAL AND COSMOPOLITAN HUMAN CAPITAL: THE EFFECTS OF GLOBAL MINDSET AND

	ORGANIZATIONAL ROUTINES ON CULTURAL INTELLIGENCE AND INTERNATIONAL EXPERIENCE. IN, THE OXFORD HANDBOOK OF HUMAN CAPITAL.
Module 5 Week of Oct 2nd WebEx session #4 Oct 2nd	**GLOBALIZATION AND THE FLOW OF HUMAN CAPITAL ASSETS** • Interaction between education, training, work experience and economic development. • Direct foreign investment and the flow of knowledge capital and labor across boarders and economies. • Strategies for protecting and nurturing Intellectual Property across boarders: cultural issues, legal systems and corporate systems. • Rights of employees in protecting and enjoying the rewards associated with their own intellectual property (creating a win/win for organization and individual) **Readings:** Andreas Schotter, Mary B. Teagarden (2012) "Protecting Intellectual Property in China: A View from the Field" in *Global Strategies for Emerging Asia*, A.K. Gupta, T. Wakayama and U. S. Rangan, eds, Jossey Bass, San Francisco, CA.
Oct 9th	**NO CLASS, NYU FALL BREAK**
Module 6 Week of Oct 16th WebEx session #5 Oct 16th	**POLICY AND ETHICAL ISSUES IN HUMANIZING WORK IN AUTOMATED ENVIRONMENTS** · Building technologies for psychological sustainability to reduce stress and produce jobs that are dignified, safe and enjoyable. · Moving from treating people like machines to replacing people with machines: are we enhancing human capability or destroying it? · Issues of motivation and personal development in an automated work environment **Readings:** Brynjolfsson, E. and McAfee, A. Race Against the Machine, Chapters 1,2 & 5.
Week of Oct 23rd No WebEx session this week	**ASSESSMENT - MID-TERM EXAM (ON-LINE ON CLASSES – THERE WILL BE NO REGULAR WEBEX SESSION)** **ASSIGNMENT – UPLOAD ONE PAGE OUTLINE OF CLASS PROJECT ON CLASSROOM (SEE INSTRUCTIONS)**
Module 7 Week of Oct 30th WebEx session #6 Oct 30th	**Introduction to Analytics & Alignment** • Balanced Scorecard and the Strategy Map • Creating measurement from organization objectives. • Case examples of HR Measurement and Benchmarking (A la Saratoga Institute) • Understanding Cause and Effect Relationships through Lead and Lag Measures Pease: Chapter 1 & Chapter 2 Assignment – Upload First Draft of Term Project Strategy Map Part I
Module 8 Week of Nov 6th	**Measurement Plan and Supporting Data Foundation** • Hypotheses or business questions • Defining the metrics • Demographics • Data sources and requirements

WebEx session #7 Nov 6th	• Types of data and linking these together • Importance of data structures for automation • Ethics of measurement and evaluation Pease: Chapters 3 and 4 Assignment – Upload first draft of Team Project Strategy Map Part II (Competency Model)
Module 9 Week of Nov 13th WebEx session #8 Nov 13th	**Dashboards and KPIs (Key Performance Indicators)** • Types of analysis/measurements and their impacts. • Visual representations of data • Time Series • Enhanced metrics and descriptive stats • Correlation & Regression Mapping Cause and Effect (Path Analysis) • Statistical significance • Reward Systems and their Impact on Behavior • HR Scorecards & Dashboard Design Pease: Chapter 5 and 6 Assignment – Resubmit Strategy Map Parts I & II after feedback
Module 10 Week of Nov 20th WebEx session #9 Nov 20th	**Beyond ROI to Optimization** • Optimization • Presenting the financials • Telling the story and adding up the numbers • Preparing for meetings • Understanding Economic Value Added (EVA) and how it demonstrates organization effectiveness. Pease: Chapters 7 and 8 Assignment – Submit First Draft of HC Scorecard and Data Flow Diagram
Module 11 Week of Nov 27th WebEx session #7 Nov 27th	**Making it Happen: Technology Enabled HR Analytics:** • Course review • Creating a plan • Designing a team • KSAOs needed • Execution and support • Cloud • Global issues in the cloud • The ultimate goal • HCA 2.0 Pease: Chapter 9 Assignment - Submit Dashboard Design
Weeks of Dec 4th and Dec 11th	**STUDENT INDIVIDUAL WEBEX CONSULTATION ON THEIR CASE ORGANIZATION TERM PAPER**

Individual WebEx or face-to-face sessions with each student	Assignment – Submit Term Paper including final versions of all previous Term Paper submissions.
TBD	**ASSESSMENT - FINAL EXAM (ON-LINE ON CLASSES)**

Academic Integrity:

All students are responsible for understanding and complying with the NYU Statement on Academic Integrity.

Academic Integrity for Students at NYU

This policy sets forth core principles and standards with respect to academic integrity for students at New York University. Each school at New York University may establish its own detailed supplemental guidelines for academic integrity, consistent with its own culture, and consistent with the University-wide general guidelines described in this document.

At NYU, a commitment to excellence, fairness, honesty, and respect within and outside the classroom is essential to maintaining the integrity of our community. By accepting membership in this community, students take responsibility for demonstrating these values in their own conduct and for recognizing and supporting these values in others. In turn, these values will create a campus climate that encourages the free exchange of ideas, promotes scholarly excellence through active and creative thought, and allows community members to achieve and be recognized for achieving their highest potential.

In pursuing these goals, NYU expects and requires its students to adhere to the highest standards of scholarship, research and academic conduct. Essential to the process of teaching and learning is the periodic assessment of students' academic progress through measures such as papers, examinations, presentations, and other projects. Academic dishonesty compromises the validity of these assessments as well as the relationship of trust within the community. Students who engage in such behavior will be subject to review and the possible imposition of penalties in accordance with the standards, practices, and procedures of NYU and its colleges and schools. Violations may result in failure on a particular assignment, failure in a course, suspension or expulsion from the University, or other penalties.

Faculty are expected to guide students in understanding other people's ideas, in developing and clarifying their own thinking, and in using and conscientiously acknowledging resources - an increasingly complex endeavor given the current environment of widely available and continually emerging electronic resources. In addition, students come to NYU from diverse educational contexts and may have understandings regarding academic expectations that differ from those at NYU. NYU values and respects all academic traditions; however, while at NYU, students are expected to adhere to the norms and standards of academic integrity espoused by the NYU community and will be assessed in accordance with these standards. Students should ask their professors for guidance

regarding these standards as well as style guide preferences for citation of sources for assignments in their courses.

Following are examples of behaviors that compromise the academic and intellectual community of NYU. The list is not exhaustive. Students should consult the websites and guidelines of their individual schools for an extended list of examples and for further clarification.

1. Plagiarism: presenting others' work without adequate acknowledgement of its source, as though it were one's own. Plagiarism is a form of fraud. We all stand on the shoulders of others, and we must give credit to the creators of the works that we incorporate into products that we call our own. Some examples of plagiarism:

- a sequence of words incorporated without quotation marks
- an unacknowledged passage paraphrased from another's work
- the use of ideas, sound recordings, computer data or images created by others as though it were one's own

2. Cheating: deceiving a faculty member or other individual who assess student performance into believing that one's mastery of a subject or discipline is greater than it is by a range of dishonest methods, including but not limited to:

- bringing or accessing unauthorized materials during an examination (e.g., notes, books, or other information accessed via cell phones, computers, other technology or any other means)
- providing assistance to acts of academic misconduct/dishonesty (e.g., sharing copies of exams via cell phones, computers, other technology or any other means, allowing others to copy answers on an exam)
- submitting the same or substantially similar work in multiple courses, either in the same semester or in a different semester, without the express approval of all instructors
- submitting work (papers, homework assignments, computer programs, experimental results, artwork, etc.) that was created by another, substantially or in whole, as one's own
- submitting answers on an exam that were obtained from the work of another person or providing answers or assistance to others during an exam when not explicitly permitted by the instructor
- submitting evaluations of group members' work for an assigned group project which misrepresent the work that was performed by another group member
- altering or forging academic documents, including but not limited to admissions materials, academic records, grade reports, add/drop forms, course registration forms, etc.

3. Any behavior that violates the academic policies set forth by the student's NYU School, department, or division.

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.