



SPRING 2016 ANALYTICAL CONSULTING LAB: DECS 915

Department of Managerial Economics and Decision Sciences

Kellogg School of Management • Northwestern University

Professor: Russell Walker



ANALYTICAL CONSULTING LAB SYLLABUS SPRING 2016

Background on the Analytical Consulting Lab

The Analytical Consulting Lab (ACL) is part of the Kellogg experiential learning initiative. The specific interest in the Analytical Consulting Lab comes out of the deep demand for business leaders that can provide guidance in analysis and focus that analysis to specific business questions. Additionally, many recruiters and employers have commented that finding talent that bridges the business and analytical communities is difficult. The ACL strives to provide a real-world learning experience for students to work with sponsoring companies on business questions that revolve around analysis. Students work in teams using analysis (broadly defined) to answer current and important business questions.

Kellogg has a strong tradition in bringing analysis to bear on business questions. In fact, the Analytical Consulting Major is the second most popular major at Kellogg, suggesting that not only does the ACL support this major, but it will resonate strongly with the goals of many a Kellogg MBA student.

Course Details

The ACL is offered as DECS-915, a full credit course.

Most projects in the ACL are sponsored by Kellogg alumni, at very senior levels in their organizations. Students taking the ACL are assured a strong learning experience and a commitment from the firm to provide access to decision maker and information that will make the experience meaningful.

Details on projects, companies, and information about selecting projects is available at:

<http://kellogg.northwestern.edu/faculty/walker/htm/acl>



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Application Process

Students interested in the ACL must submit an application for project selection.

The application permits optimal project assignment, based on student goals, client needs, and project requirements.

Applications are accepted by the Kellogg Experiential Learning system. Students should apply for DECS 915 via the Kellogg Experiential Learning System, at:

<https://www4.kellogg.northwestern.edu/el/>

The application start date is Jan 25.

The application close date is Feb 5.

Decision date is on or before Round 1 bidding

Key parts of this application include:

- Resume or CV
- List of courses taken at Kellogg with grades
- Description of any professional Analytical Experience (no specific experience needed)
- Description of any professional Consulting Experience (no specific experience needed)
- Special service to Kellogg
- Reasons for taking the ACL
- Goals for taking the ACL
- Project Choice #1
- Project Choice #2
- Any fellow desired Kellogg student for a team (limit of one student to specify). Team member preference is only considered if both people select each other.
- Other information that you may wish to share in your application, personal goals, career aspirations, etc.

Student teams that are fully formed (a team of 4) are encouraged and will be given special preference. If you are forming a team and submitting as a team, do make that clear in the application and stress how your team has come to select the project and how it meets your goals.

Student information in the application process is used in formulating teams and assigning projects so that goals, backgrounds, skills, and expectations are all best aligned.

Project Assignment

Student assignments to client projects will be based on individual preferences, requested skill sets and industry experience, and team member diversity. Every attempt will be made to grant students their first or second choice of projects. Student information is collected via the application. Students may select one fellow student for a project. This fellow student selection is honored as possible, if the both students select each other.



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Students will be notified about their project assignments during the term before the class. All efforts are taken to accommodate first choices, while forming teams with an appropriate set of skills and interests. Preference is given to pre-formed teams.

Case Packet and Readings

As this course is an experiential one, there are no specific cases to prepare. However, many students have looked for examples of companies that have excelled at Analytics. Also, as the course emphasizes consulting and best practices in a professional client engagement, there is a need to consider some of these best practices. Given this, the following texts are recommended and optional:

- 1) The McKinsey Way, Ethan M. Rasiel, McGraw-Hill
- 2) Competing on Analytics, Tom Davenport and Jeanne Harris, HBS
- 3) From Big Data to Big Profits: Success with Data and Analytics, Russell Walker, Oxford University Press, 2015.

These texts are easily purchased on-line and used at great prices, so these are not requested in the bookstore.

Course Meetings

As with other experiential courses, the focus is on the team project and its delivery to the sponsoring company.

Teams will meet with the Professor on a regularly and frequent basis in order to discuss the analysis, flow of work, final presentation and delivery to the sponsoring team. The class will also meet with the prescribed schedule to review concepts and themes important in being successful with the analytical consulting function and in order to provide presentations for the purpose of group learning.

All Group Meetings are to be held with the team and the Professor at a pre-defined time that works mutually. Meetings with the Professor and Client must conclude before 4:30PM on weekdays. PTMBA students are welcome to the class, but cautioned on this scheduling constraint. Students who cannot make meetings in person are encouraged and welcomed to join via telephone.

Pre-term activities

- Project identification
- Team formation
- Identification of Team Liaison to Client
- Identification of Team Liaison to Professor
- Client Introduction
- Project description
- Schedule first group meeting with Professor
- Schedule first client meeting with Client

Week I:

Class Session I (March 30, 2016)



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Getting Started with DECS 915
Managing Project Ambiguity
Managing Teams
Overview of the Consulting Approach
Dealing with Data
Descriptive Statistics
Using Tools: JMP, Excel, @Risk
STATA Resources at Kellogg

Guest Speaker: NWU Librarian:

Using Business Databases from the NWU Library for market and firm measurement.

Bring your laptop and be ready to explore databases!

Week II:

Group Meeting I:

Developing a Work Plan, Project Analysis
Examples of Past Analysis
Use of Graphics
Best Practices in Presentation of Data
Building Points Through Analysis

Week III:

Group Meeting II:

Preliminary Analysis of Data
Teams to bring descriptive statistics to meeting with Professor
Work Plans due to Professor

Week IV

Group Meeting III: Focus on Data and Analysis
Address questions and issues in analysis

Week V

Group Meeting IV: Prep for Midpoint Check-in

Class Session II (Apr 27, 2016):

Mid-term progress review and **team mini-presentations**
Mid-point document due at beginning of class

Week VI :

Group Meeting V:

Mid-point feedback, planning for next phase

Week VII

Group Meeting VI:

As per team needs

Week VIII

Group Meeting VII:
As per team needs

Week IX

Group Meeting IX:
Dry-run of presentation with Professor

Week X

Class Session III (June 1, 2016)

Project Findings

Final project deliverable due to Professor and Client on June 1, 2016

Meetings with Clients to be held and presentations made to client in person during or before final week of classes.

As in any professional consulting engagement, the students are requested to regularly meet with the client to receive input, data, direction of project goals, and feedback on the progress as needed. All clients are committed and dedicated to fulfilling the learning and business aspect of the project.

Teams may schedule additional time with the Professor as needed and as available.

Grading

Grading of the project is driven largely by the quality of the team project. The Professor will evaluate the project, its analysis, presentation, and delivery on the following major points:

- Analysis:
 - Quality of analysis (thoroughness, appropriateness)
 - Clarity and quality of model summary and description
 - Intellectual impact (was the analysis creative, novel, clever, or otherwise compelling?)
- Project Document
 - Quality of project description
 - Quality of analysis summary
 - Quality of recommendations and conclusions
 - Use of meaningful graphs, graphs, and presentation of data
- Presentation Documents
 - Quality of presentation
 - Professional impact of the presentation
 - Ability to communicate main points of the analysis and recommendations
- Team Meetings
 - Preparation
 - Organization
 - Progress

The Professor will ask the client company to provide feedback on the same above points.



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Peer evaluations will also be collected from each member. Each student must rate their teammates on the following dimensions:

- Intellectual and creative contribution
- Workload and willingness to take initiative
- Organization, preparation, and availability
- Collaboration and respect for peers

Peer evaluations will be on a 1-10 scale with 10 being excellent and 1 being poor. All peer evaluations will be treated confidentially.

All ACL students must participate, as participation is also important to make this a meaningful learning experience for all involved.

Grade Breakdown

Professor Evaluation of Final project materials and presentation:	30%
Professor Evaluation of Work plan and Mid-point review:	20%
Client Evaluation of Final project materials and presentation:	20%
Peer Evaluations (*):	15%
Preparation during team meetings and class participation:	15%

* Note: The Professor reserves the right to adjust any student's final grade up or down by a full letter grade in the event that the student's peers unanimously score his or her contributions significantly above or below the overall team effort. Feedback from the client on individuals who have not contributed can also result in letter grade adjustments.

Role of the Professor

The Professor serves as an aide, counselor, and advisor for the team. The Professor does not conduct the analysis, but will provide detailed direction on analytical approaches. The Professor does not serve as the team liaison or representative to the client. The team must organize itself and identify such a liaison.

In the event that the client or the ACL student team encounter an incompatibility or encounter an issue, the Professor will intervene to remedy the situation.

The Professor may also resolve project assignments, as needed.

Role of the Team

The team will consist of 3 or 4 Kellogg MBA students working as a team to complete analysis, as defined by the client as agreed to before the start of the academic term.

The team should be mindful to control the amount of time that is required of the client. This means being prepared for meetings, having a designated liaison to schedule meetings, request information, and follow-through with next steps. This level of preparation and understanding is



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needed as most clients sponsor this project but do not allocate a full-time associate to work with the ACL team.

The team should expect to contribute about 300-400 hours over the 10-week period to this ACL project. This is a reasonable expectation for a team working on a project and is consistent with other experiential and lab courses at Kellogg. This translates to 8-10 hours per person per week.

The team will produce a white paper that documents the study, results, and recommendations. The team will also prepare a presentation and deliver it in person to the client and its team. A reduced version with emphasis on key findings is also to be presented at the last class.

Role of the Client

The client provides the real-world learning opportunity, data needed to complete the appropriate analysis, and feedback on the quality of the project and its analysis. The Client is not expected to solve the problem, but should provide ample expertise, data, and contextual information to the ACL team.

Prerequisites

All students in the ACL must have completed DECS core. There are no other requirements.

Some FAQs:

What is the Analytical Consulting Lab?

It is a course available to Kellogg MBA students that are interested in the use of analytics in business. Students must take specific prerequisites and have strong academic performance in such classes to take the Analytical Consulting Lab. Students work in teams to resolve a real-work business problem using analytics.

What do you mean by Analytics?

It is meant to be broad but includes the use of specific quantitative approaches, such as regression analysis, time series analysis, forecasting, market segmentation, data mining, optimization, logistical analysis, scenario simulation, and risk analysis, as examples. In particular, we mean solving a business problem using data and applying one of these quantitative approaches.

How can PTMBA Students participate?

The ACL is open to PTMBA students on a limited basis, subject to all meetings with the Client and Professor being conducted during normal business hours, which are taken as before 5PM on weekdays only. Please contact Dr. Russell Walker on any questions regarding your interest on the course. PTMBA students should organize in groups.

How can Saturday MBA Students or MSMS students participate?

At this time the ACL is not available to Saturday MBA students or MSMS students, given the need to meet in person with the Client and Professor on a regular basis outside of the format of these Kellogg programs.

How does this experience benefit the students?

Kellogg MBA students taking the ACL will work on a real-world problem under the direction of a Kellogg faculty member. The opportunity to apply analytical theory and learn about a business, make recommendations, and bring together many aspects of their business education is unparalleled. We also ask that the students focus on how to communicate the results of analysis in the context of business decision-making. For students interested in moving to an industry to deep in analytics after graduation or developing new business skills in analytics, this course will be very attractive.

The Analytical Consulting Major is one of the most popular majors at Kellogg and students have expressed deep interest in developing strong skills in analytics. This course meets an interest in our students and provides them an experiential learning opportunity that will prepare them for business opportunities.

How does the Client benefit from this opportunity?

The ACL is an intensive analytics elective that attracts some of our most analytically talented MBA students. It is expected that the student group of 4 will commit about 400 working hours to the project. Additionally, the student project will be overseen by a Kellogg faculty member that has expertise in analytics and its application in business.

We expect that the project deliverables, recommendations, and report will provide direct value to your organization. However, we also believe that the project provides your organization and opportunity to determine how and where to invest in more analytics. If this includes the acquisition of more analytical talent, the project provides an excellent conduit to members of our student body that are talented and interested in this space.

How does the team work with the Client?

For the student team, the partnering company is a client. They will conduct their analysis and provide recommendations through a report and presentation in the same format and in the same manner as a consulting service. The faculty member also serves as an important liaison between the partner and the student, serving to manage time commitments and negotiate deliverables. It is expected that the student team can meet with and speak with key members of your team that can help them answer questions relevant to the analysis.

Which software will we use?

It really depends on the project and your familiarity with software packages. This course is software agnostic, meaning most software packages are acceptable. The course does not have as a goal to teach a particular package, but rather to enable analytics in a business project. You are welcome to use software of your choice. Most projects can well be completed with a combination of Excel and one statistical package. Students having taken DECS 915 have found using JMP, STATA, R, SPSS, and @Risk useful. Kellogg provides support and access to STATA. Access to JMP, @RISK, STATA, and SPSS will be discussed in the course. If you are unsure or unfamiliar with statistical software, we will discuss that during our first meeting. Some packages may have a minimal cost.

What about the data?



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To make this experience valuable to the students and the to solve the business problem at hand, we do need access to data. It is important that the data be available before the project begins. Additionally, the project should make use of “scrubbed” data, that is data that is free of specific information that would be sensitive or otherwise governed by a law, such as social security numbers of customers or names of customers.

What types of business problems can be considered?

As analytics is helpful in many business functions, we are open to many applications of analytics. Specific business problems in marketing, forecasting, customer segmentation, pricing, commodity analysis, logistics, risk management, operations, inventory leveling, supply chain improvement, and scenario planning are sure to provide great analytical opportunities.

Will the analysis become public?

The work between the students and your organization is considered confidential. If necessary, the students may be asked to sign a non-disclosure agreement. If this is necessary, we ask that the non-disclosure agreement be such that it does not prevent the students from seeking employment or from building on their experience gained on the project.

From time to time, such company-student projects lead to very interesting business lessons. As a leading business school, we are interested in sharing such lessons with our next generation students and business leaders. We do this through business cases. If such an opportunity exists with your project, we will seek your permission to relate the business lesson through a case study.

How to I join the Class?

First, you must meet the prerequisites. Then submit your application to Professor Russell Walker before the deadline. The application is used to build teams, assign you to one of your top project choices.

Contact Information

Please contact Russell Walker, Ph.D.

Via e-mail at russell-walker@kellogg.northwestern.edu

or via phone at +1 847 467 2148.



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ANALYTICAL CONSULTING LAB CANDIDATE PROJECTS SPRING 2016

Welcome to the Analytical Consulting Lab!

In the following pages, you will find candidate projects from sponsoring companies under the Analytical Consulting Lab (DECS 915) for Spring 2016.

The projects listed include working with actual company data, developing meaningful analytical models for managerial decision-making, and presenting results and recommendations to company executives. Most projects will require some level of Non-Disclosure Agreement (NDA) with the sponsoring company.

More information about the class can be found at its website:

<http://kellogg.northwestern.edu/faculty/walker/htm/acl/>

Please feel free to contact me at

847 467 2148 or russell-walker@kellogg.northwestern.edu

with any questions and interest

Thanks for your interest.

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