The Art of Forecasting: Crystal Ball, or Magic 8-Ball?

*Perspectives from experienced analysts and PMs*

**Spring 2020 B-Term Bidding Syllabus**

**Day/Time:** Tuesday 9am – 12:15pm

**Location:** Warren 209

**PROFESSOR**

Ellen Carr
Professor Office Location: TBD
Phone: 310-497-9069
E-mail: ec2895@columbia.edu
Office Hours: 8-9am Tuesday / by appointment

**TEACHING ASSISTANT**

Communications from professor and teaching assistants about the course will take place through Canvas. Students should regularly check for announcements and messaging notifications.

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**COURSE DESCRIPTION**

The core curriculum at CBS gives students the building blocks for quantitative modeling, DCF analysis, and securities valuation based on the outputs of these models. But what happens in the real world of investing? This class will build on the Core’s forecasting toolkit with a more qualitative approach, and prepare you to create realistic, stress-tested, multi-dimensional cash flow forecasts for use by investors across the capital structure, along with the assumptions that go into them.

**Goals:**

- Develop a line-by-line, cross-capital-structure approach to forecasting cash flow
- Develop and stress-test reasonable assumptions for the most relevant drivers of forecasting outputs
- Identify, anticipate and learn to protect against various biases in forecasting (e.g., anchoring bias)
- Forecast cash flow in a base, upside, and downside case
- Forecast cash flow for companies in cyclical industries and those undergoing secular and structural changes with meaningful potential impact on cash flow (e.g., yellow pages, brick and mortar retail)

**REQUIRED COURSE MATERIALS**

**Recommended Pre-Reading:**

Philip Tetlock/Dan Gardner, *Superforecasting*

Nate Silver, *The Signal and the Noise*

Selected articles on forecasting (in Canvas Files: “Supplemental Reading” folder)

**In-Class Reading:**

Weekly forecasting exercises/case studies will include assigned reading for each company (financial statements, earnings call transcripts, other readings as needed).
REQUIRED PREREQUISITES AND CONNECTION TO THE CORE

The learning in this course will utilize, build on and extend concepts covered in the following core courses:

<table>
<thead>
<tr>
<th>Core Course</th>
<th>Connection with Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Finance</td>
<td>1. Free cash flow</td>
</tr>
<tr>
<td></td>
<td>2. Valuing bonds and stocks</td>
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<tr>
<td></td>
<td>3. Advanced capital structure</td>
</tr>
</tbody>
</table>

Students will be expected to have mastered these concepts and be able to apply them in the course.

While not prerequisites, Capital Markets and Security Analysis are highly relevant to the subject matter of this course.

ASSIGNMENTS/COURSE MATERIALS

Case Assignments and Reading Assignments are posted on Canvas. Please note that you have two pre-class assignments which must be submitted via Canvas by 5pm on Friday, March 22nd.

COURSE ROADMAP/SCHEDULE

See the final page of the syllabus for a detailed course agenda. Note that this is subject to change based on the schedules/availability of our guest speakers.

ATTENDANCE POLICY

Students are required to attend each class. Students should reach out to the Office of Student Affairs (OSA) by using Core Absence Form on this course’s Canvas page regarding excused absences (for religious observances; personal, medical, and family emergencies; military service; court appearances such as jury duty). Unexcused absences will affect your course grade.

The attendance policy for this course mirrors the Core Course Policy:

- Students who miss more than 33% of classes due to unexcused absences will receive a maximum grade of P. Note: In effect, since this is a B Term course, this means you cannot miss more than two classes to earn a grade higher than P.
- Students who miss more than 50% or more will receive an F in the course. Note: Weddings are not an excused reason to miss an exam or class.

TEAM FORMATION

You will need to form teams of five - six (minimum four) for the team assignments (five cases and the final project) and register those teams on Canvas during the break on the first day of class. As always, please attempt to form groups that incorporate a range of different backgrounds and skill sets. Please do not ask for exceptions to the four-person minimum rule; if you can’t find enough people for your team, please let TA Erik Kogut know and we will consolidate smaller groups.
METHOD OF EVALUATION

Grades will be calculated as follows:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Contribution</th>
<th>Indiv/team</th>
<th>Due date- 2019 DATES FOR EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Class Assignments</td>
<td>5%</td>
<td>Individual</td>
<td>Friday 3/22/19 5pm*</td>
</tr>
<tr>
<td>Class Participation</td>
<td>15%</td>
<td>Individual</td>
<td>Tuesday 5pm survey deadline weekly</td>
</tr>
<tr>
<td>5 Forecasting Exercises</td>
<td>50%</td>
<td>Team</td>
<td>Monday midnight day before in-class debrief</td>
</tr>
<tr>
<td>1 Postmortem</td>
<td>5%</td>
<td>Individual</td>
<td>Monday midnight one week after in-class debrief</td>
</tr>
<tr>
<td>Presentation Critiques</td>
<td>5%</td>
<td>Individual</td>
<td>Tuesday 5pm of in-class debrief</td>
</tr>
<tr>
<td>Team Evaluation</td>
<td>5%</td>
<td>Individual</td>
<td>5/3/19 5pm (Friday after class end)</td>
</tr>
<tr>
<td>Final Project</td>
<td>15%</td>
<td>Team</td>
<td>Friday 5/10/19 5pm</td>
</tr>
</tbody>
</table>

* Monday 4/1/19 5pm for late adds

Grades will reflect knowledge and application of the course material and communication skills. This course is intended to be interactive, and class participation is critical.

ASSIGNMENTS

All of your assignment submissions are subject to the CBS Honor Code. Violations of the CBS Honor Code may lead to failing the assignment, failing the course, suspension, and/or dismissal. In order to avoid ambiguity that may lead to unintentional violations of the Honor Code, assignment description types have been standardized and specified below.

<table>
<thead>
<tr>
<th>Type</th>
<th>Designation</th>
<th>Grade</th>
<th>Preparation of submission</th>
<th>Discussion of Submission*</th>
<th>Discussion of Concepts**</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Group Work</td>
<td>Same grade for all group members</td>
<td>By the group</td>
<td>Permitted to discuss (within group)</td>
<td>Permitted</td>
</tr>
<tr>
<td>B1</td>
<td>Individual w/ Discussions of Concepts and Submission</td>
<td>Individual grade</td>
<td>Individual preparation</td>
<td>Permitted to discuss; sharing solutions or submission files is not allowed</td>
<td>Permitted</td>
</tr>
<tr>
<td>B2</td>
<td>Individual w/ Discussions of Concepts Only</td>
<td>Individual grade</td>
<td>Individual preparation</td>
<td>Not permitted to share/discuss solutions or submission</td>
<td>Permitted</td>
</tr>
<tr>
<td>C</td>
<td>Individual</td>
<td>Individual grade</td>
<td>Individual preparation</td>
<td>Not permitted to share/discuss solutions or submission</td>
<td>Not permitted***</td>
</tr>
</tbody>
</table>

* The designated group can be either an assigned study group or a self-selected one.
Pre-Assignments (5% of your grade—Type C/Individual)

- Review simple cash flow model; input 3-year historical numbers for HCA. (2 points)
- Writing assignment: Peabody Energy (3 points)
  - Review the JPM and Citi sell-side reports from early 2015 and BTU’s 2014 10-K, 1Q15 10-Q, year-end/1Q earnings presentations, and year-end/1Q earnings call transcripts.
  - In no more than two pages, summarize the analyst forecasts included in each report, compare them to management’s commentary, and answer the following questions:
    ▪ What were the major assumptions behind each analyst’s forecast?
    ▪ What was missing from the forecasts?
    ▪ How much guidance did management provide that could be used in forecasting? How did the analysts use this guidance in their forecasts?
    ▪ If you were a PM reading the analyst reports, what questions would you have about the forecasts?
    ▪ Compare the analyst forecasts for 2015 revenue and EBITDA to what ultimately happened (per the BTU 2015 10-K). Knowing that hindsight is 20-20, what mistakes can you identify in the analysts’ methodologies and assumptions?

Class Participation (15%)—Type C/Individual

This is a highly interactive class, and your participation is critical to your success and the success of the course. There will be cold calling on both reading and case assignments. You will be asked to note your attendance and any contribution(s) you make in a weekly survey. In each survey, you will answer two questions – first, did you attend the class and second, did you contribute to the class by answering questions or making comments. If you have to miss class for a pressing reason, you may get attendance credit by watching the class video and summarizing it in one page, single spaced.

In addition to verbal commentary in class, participation grades can be enhanced by submission of relevant written material (e.g. news articles, excerpts/quotes from books) with commentary to Canvas. If you submit something, be prepared to discuss it at the next class. A good quality contribution—verbal or written—provides insight on some issue under study.

Finally, high quality, relevant questions for our guest speakers that demonstrate understanding of the material and seek to take that understanding to the next level can enhance your class participation grade.

Weekly Cases/Forecasting Exercises (10% each/60% total—Type A/Group and Type C/Individual)

- **Part One: Create a forecast (10 points—team).** Each week you will work in teams to create a forecast for a given company at a given point in time (most of the cases are historical, so that we have the benefit of actual numbers to compare to forecasts). Each case folder includes a 10-K and the last 4 earnings call transcripts, along with other relevant information as available. Your team will create a model and forecast going as far back, and forward, as you believe is relevant to your forecast. These forecasts will differ in emphasis based on the concept we are discussing in class that week. **It is a violation of the honor code to look ahead at financial statements to help you with your forecasts.**
- **Part Two: In-class debrief (1 point—individual).** Each debrief will have 2-3 team presentations, which will permit each team to present once in class. As part of the weekly survey, you will provide a brief critique of the presenting teams’ presentations on the weekly class participation survey.
Part Three: Postmortem (5 points—individual). On the week that your team presents ONLY, you will submit a postmortem (maximum two Word pages, double-spaced) on the case based on a review of the financial statements in the subsequent three years/the 10K three years AFTER the forecast period. (These will be uploaded to Canvas after the class in which we discuss the case.)

Team Evaluation (5%)—Type C/Individual

At the end of the course, you will be asked to survey your fellow team members and rate each member on a scale of 1 to 5. The average of your teammates’ ratings of you will comprise your team evaluation grade.

Final Project (15% of your grade—Type A/team)

For the final project, prepare an upside/base/downside case 5-year forecast for Ford. More detail is available on Canvas.

INCLUSION, ACCOMMODATIONS, AND SUPPORT FOR STUDENTS

At Columbia Business School, we believe that diversity strengthens any community or business model and brings it greater success. Columbia Business School is committed to providing all students with the equal opportunity to thrive in the classroom by providing a learning, living, and working environment free from discrimination, harassment, and bias on the basis of gender, sexual orientation, race, ethnicity, socioeconomic status, or ability.

Columbia Business School will make reasonable accommodations for persons with documented disabilities. Students are encouraged to contact the Columbia University’s Office of Disability Services for information about registration. Students seeking accommodation in the classroom may obtain information on the services offered by Columbia University’s Office of Disability Services online at www.health.columbia.edu/docs/services/ods/index.html or by contacting (212) 854-2388.

Columbia Business School is committed to maintaining a safe environment for students, staff and faculty. Because of this commitment and because of federal and state regulations, we must advise you that if you tell any of your instructors about sexual harassment or gender-based misconduct involving a member of the campus community, your instructor is required to report this information to a Title IX Coordinator. They will treat this information as private, but will need to follow up with you and possibly look into the matter. Counseling and Psychological Services, the Office of the University Chaplain, and the Ombuds Office for Gender-Based Misconduct are confidential resources available for students, staff and faculty. “Gender-based misconduct” includes sexual assault, stalking, sexual harassment, dating violence, domestic violence, sexual exploitation, and gender-based harassment. For more information, see http://sexualrespect.columbia.edu/gender-based-misconduct-policy-students.

CLASSROOM NORMS AND EXPECTATIONS

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Students seeking accommodation in the classroom may obtain information on the services offered by Columbia University’s Office of Disability Services online at www.health.columbia.edu/docs/services/ods/index.html or by contacting (212) 854-2388.

Students are expected to adhere to CBS Core Culture in this class by being Present, Prepared, and Participating. This includes the following:

- Ensure that you read this syllabus, particularly with regard to the participation grade and how it is determined.
- Be on time for every session.
- Expect attendance and participation to be tracked.
- Fill out the class participation survey each day.
- Submit assignments on time, and expect cold calling of assigned questions.
- Prepare for lectures by reviewing lecture slides and submitting questions for each guest lecture.
- Bring nameplate every day and sit in same seat every day.
- Do not use electronic devices unless explicitly called for by instructors (no cell phones or laptops).
- Bring your laptops for use during in-class casework and case debriefs (several teams will be selected each day to present during the debriefs).
- Use scheduled breaks whenever possible to leave the classroom – unscheduled breaks disturb your fellow classmates.
- Treat guest speakers as your guests - they are taking time out of their schedules and in some cases coming far distances to be with us.
- Do not distribute guest lecture material outside the classroom. Any distribution of guest lecture material will be treated as a violation of the CBS Honor Code.
- In class, please demonstrate consideration for your classmates (and your instructors and guest speakers) by closing laptops during lectures and guest appearances, posting nameplates and by being on time at the beginning of the class and at the break.
- Slide presentations will be posted on Canvas for review prior to class/viewing during class.
- Use Canvas to submit all assignments including articles that you would like to contribute.
<table>
<thead>
<tr>
<th>Tuesday 3/26/19</th>
<th>Tuesday 4/2/19</th>
<th>Tuesday 4/9/19</th>
<th>Tuesday 4/16/19</th>
<th>Tuesday 4/23/19</th>
<th>Tuesday 4/30/19</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction to forecasting/base cases</strong></td>
<td><strong>Upside case forecasts</strong></td>
<td><strong>Downside case forecasts</strong></td>
<td><strong>Secular industry forecasts</strong></td>
<td><strong>Cyclical industry forecasts</strong></td>
<td><strong>Forecasting miscellany/class wrap-up</strong></td>
</tr>
<tr>
<td>9:30 Course introduction, syllabus overview</td>
<td>9:30-10:30 Review of HUN case learnings/further areas of exploration</td>
<td>9:30-10:30 Guest speaker: Chris Weldon, Stamina Capital (CMG debrief/unit economics)</td>
<td>9:30-10:30pm Guest speaker: Bob Kricheff, Schenkman (Gray debrief)</td>
<td>9:30-10:45 Guest speakers: Frank Byrd, Fielder Capital; Carla Cassella, JP Morgan (BBI debrief--equity and debt perspective)</td>
<td>9:30-10:30 Guest speaker: TBD (getting the most out of your time with CFO/treasurer/IR)</td>
</tr>
<tr>
<td>10:10-10:30 Introduction to forecasting: 6-step process</td>
<td>10:30-10:45 Break</td>
<td>10:30-10:45 Break</td>
<td>10:30-10:45 Break</td>
<td>10:45-11 Break</td>
<td>10:45-10:45 Break</td>
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<td>10:30-10:45 Break</td>
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<td></td>
<td>10:45-11:15 BBI/other postmortems</td>
</tr>
<tr>
<td>10:45-11:30 Intro to forecasting (con't); in-class caselet setup (JC Penney)</td>
<td>10:45-11:45 Guest speaker: TBD (introduction to upside cases)</td>
<td>10:45-12 Introduction to downside cases (including in-class exercise on covenant violations)</td>
<td>10:45-12 Introduction to forecasting in industries undergoing secular changes (including in-class exercise on FTR forecasting)</td>
<td>11-12 Introduction to forecasting in cyclical industries (including in-class exercise on NXP forecasting)</td>
<td>11:15-11:45 Concept check/in-class review</td>
</tr>
<tr>
<td>11:30-11:50 Work on JCP caselet in teams</td>
<td>11:45-12 Concept check (cash flow forecasting)</td>
<td>12-12:15 Homework setup: Gray/survey completion</td>
<td>12-12:15 Homework setup: Blockbuster/survey completion</td>
<td>12-12:15 Homework setup: CHK/survey completion</td>
<td>11:45-12 Course evals/survey completion</td>
</tr>
<tr>
<td>11:50-12 Caselet debrief</td>
<td>12-12:15 Homework setup: CMG/survey completion</td>
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<td>12-12:15 Final project setup: Ford/course wrap up</td>
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<tr>
<td>12-12:15 Homework setup: HUN/survey completion</td>
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