

**NEW YORK UNIVERSITY**  
Stern School of Business  
Financial Modeling & Analysis

**Professor:** David M. Perkal  
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**Office Hours:** By Appointment Only

**Lectures:** M & W: 9:30 – 10:45 am (KMEC 5-90), 11:00 – 12:15 pm (TISC UC-24) & 2:00 – 3:15 pm (TISC UC-21)

**Teaching Assistants:** Kimberly Fang (klf402), Wajeeh Mir (wam322) & Chanwoong Won (cw2928)

### **Course Overview**

Making educated decisions today by forecasting operating and financial performance is a critical exercise for owners, managers, consultants, investment bankers, creditors, equity and credit analysts, and investors such as private equity groups, hedge funds, institutional investors and individuals. As we are ineluctably constrained by our inability to predict the future, financial projections are rarely perfect. Nonetheless, we endeavor to model several scenarios predicated on historical and anticipated results to derive various conclusions. There are myriad variables, which can certainly be incorporated into projections. However, the best financial model is always the one that is stable and robust, yet simple and easy to build, navigate and audit.

The goal of this course is to instruct step-by-step how to build a comprehensive, multi-purpose projection model in Excel and subsequently interpret selective operating, credit and equity valuation data. Based on this information, you will learn how to (i) evaluate a company's operating and financial performance, (ii) develop an appropriate capital structure by structuring debt and equity transactions which not only protect both the creditors and shareholders, but also create an appropriate risk and reward equilibrium, and (iii) formulate an educated investment opinion and propitiously time entry and exit trading points.

### **Prerequisites**

The prerequisites are Principles of Financial Accounting, Financial Statement Analysis and Foundations of Financial Markets. The knowledge and skills attained in these courses are essential in understanding how to build a financial model and interpret selective operating, credit and equity valuation data. You should also be very proficient in Excel before matriculating as this course is not designed to teach it.

### **Course Materials**

There is no textbook for the course. During the lectures, we will be utilizing a projection model in Excel to which you will have access via the course website. Each class you will need to bring your company 10-K, most recent 10-Q and a laptop with any version of Excel with sufficient battery power to last throughout the class session as you will be required to replicate the techniques learned to build your own financial model.

### **Grading**

Your grade is based on a class project which includes two or three deliverables and a presentation described below. A percentage of your grade will also be based on your attendance, participation and professionalism. The class project will provide you with the opportunity to apply the skills and analytical techniques learned in the classroom to an actual company. Upon completion of the project, you should have the confidence and ability to not only build a stable, robust projection model, but also to interpret selective operating, credit and equity valuation data.

By the first lecture, you will select a publicly-traded company listed on either the NYSE or NASDAQ. A list of all of the companies comprising the primary S&P indexes, i.e. S&P 500 (large cap), S&P 400 (mid cap) and S&P 600 (small cap) is posted on the course website to assist in your selection. However, you should neither select a financial services company nor a company with a financial services division to analyze as it can be difficult to navigate.

You will print the most recent 10-K, 10-Q and any other relevant SEC filings such as an 8-K from [www.sec.gov](http://www.sec.gov). These filings will serve as primary source documents for the project and provide the requisite foundation for building your assumptions embedded in your financial model. You should also avail yourself of recent press releases, news stories and any other pertinent information, which will ultimately deepen your knowledge of the company.

You will start by inputting into Excel three years of historical and year-to-date financial information, i.e. income statements, balance sheets and statements of cash flows. You will then begin to build a five-year projection model similar to the one we will be utilizing in class, which entails developing three case scenarios, i.e., downside, base and upside, and generating summary operating, credit and equity valuation data. The summary operating data will include profitability and liquidity statistics. The summary credit data will include capital structure and solvency statistics. The summary equity valuation data will include a discounted cash flow (DCF) valuation and several relative valuation multiples such as Price/Earnings, Price/Sales, Enterprise Value/EBITDA, Enterprise Value/Sales and Free Cash Flow Yield.

Your grade comprises the following:

- **First Deliverable (20%) – Income Statement Projections (Steps 1 – 45):** Upon completion of the income statement projections with the exception of depreciation and amortization and interest expense, you will submit a copy of your projection model, which includes the income statement and assumptions, and append it to a written report with a bibliography included not to exceed ten pages single spaced. The report should briefly introduce the company, its products and/or services, locations, competitive advantages, major customers, major suppliers, senior management, board of directors, auditing firm, and any major changes including acquisitions, divestitures or lawsuits. The introductory portion should be no more than one page. The balance of the report will include a detailed discussion of and rationale for each assumption in the three scenarios embedded in your forecasts corroborated by historical performance, recent developments and anticipated results. ***Due Date: October 14, 2022 by midnight***
- **Second Deliverable (50%) – Balance Sheet Projections and Statement of Cash Flows (Steps 46 – 87):** Upon completion of the balance sheet projections and preparation of the statement of cash flows, you will submit a copy of your projection model, which includes the balance sheet, balance sheet assumptions and statement of cash flows, and append it to a written report not to exceed ten pages single spaced. The report will include a detailed discussion of and rationale for each assumption in the three scenarios embedded in your forecasts corroborated by historical performance, recent developments and anticipated results. Finally, you will e-mail the professor your projection model so that he may confirm its stability and that the balance sheet balances under all scenarios. ***Due Date: November 4, 2022 by midnight***
- **In-Class Presentation (20%) –** You will be allotted no more than seven minutes to present to the class (i) a brief description of your company, (ii) an analysis of its profitability, liquidity and solvency statistics, (iii) a discussion of the equity valuation attained with the DCF and multiples, (iv) your investment opinion, and (v) technical indicators.

***If there is no slot available, you will be required to submit a third deliverable (20%) in lieu of the in-class presentation.*** You will submit a copy of the summary statistics, discount cash flow valuation and relative valuation, and append it to a written report not to exceed ten pages single spaced. The report will include a detailed discussion of (i) the operating data with an analysis of the profitability and liquidity, and (ii) the credit data with an analysis of the capital structure and solvency. This section of the report should only contain an analysis under the downside scenario as the goal is to assess the company's ability to generate cash flow and manage leverage in a challenging operating environment. The report will also contain (i) a detailed discussion of the equity valuation data with an analysis of the assumptions embedded in the DCF, (ii) the equity valuation calculated with the DCF versus the multiples, (iii) your opinion on the appropriate value of the stock predicated on your qualitative and quantitative analysis, and (iv) certain technical indicators used to propitiously time entry and exit trading points. The equity valuation section of the report should only contain an analysis under the scenario that you feel is most plausible for the company. ***Due Date: December 14, 2022 by midnight***

- **Attendance, Participation and Professionalism (10%) –** At the beginning of each class, you will sign your name on an attendance sheet. Each lecture is calculated as a percentage of the total number of class sessions. If you are not comporting yourself in a professional manner such as using your smartphones or conversing with your classmates, your attendance for that lecture will be voided.

The total number of points a student can attain is one hundred. There is no curve, and the letter grade assigned is based on the following scoring system:

94 and above:	A
90 to 93.75:	A-
87 to 89.75:	B+
84 to 86.75:	B
80 to 83.75:	B-
77 to 79.75:	C+
74 to 76.75:	C
70 to 73.75:	C-
67 to 69.75:	D+
64 to 66.75:	D
60 to 63.75:	D-
59.75 and below:	F

## **Syllabus**

The class lectures are based on a projection model of a fictitious publicly-traded company called Victory Sportswear, Inc. Each lecture we will deconstruct the financial model in detail and learn how to replicate it from scratch. As the process of building a projection model is a methodical, sequential process, the topics in the course will be covered in the order listed in the chart on the next page. There is no specified time frame for each step in the process as some will be covered more rapidly than others. Therefore, it is incumbent upon you to attend each lecture to ensure that you extract the most benefit from the course, and thus are able to build a financial model on your own.

Topic	Description
Introduction to the financial model	<ol style="list-style-type: none"> <li>1. Briefly introduce the financial model.</li> <li>2. Input the prior three years and year-to-date financial statements, and prepare the columns for a five-year projection model with the balance sheet audit formula (<math>A = L + SE</math>).</li> <li>3. Prepare the cover page and introduce the “CHOOSE” function as it pertains to inputting the downside, base and upside case scenarios.</li> <li>4. Enable maximum iterations in Excel to prevent circular references.</li> </ol>
Project the income statement	<ol style="list-style-type: none"> <li>1. Develop the assumptions for each scenario based on historical and anticipated results.</li> <li>2. Input those assumptions and link them to the appropriate cells in the income statement with the exception of D&amp;A expense, interest expense and rent expense.</li> <li>3. Discuss quality of earnings and non-recurring charges such as asset impairments, restructuring and gains and/or losses on asset sales.</li> </ol>
Project the balance sheet	<ol style="list-style-type: none"> <li>1. Develop the assumptions for each scenario based on historical and anticipated results.</li> <li>2. Input those assumptions and link them to the appropriate cells in the balance sheet and income statement with the exception of the cash, PP&amp;E and intangibles and debt accounts.</li> <li>3. Prepare a PP&amp;E and intangibles schedule with capex and D&amp;A expense.</li> <li>4. Capitalize off-balance sheet financings such as sales of accounts receivable and operating leases.</li> <li>5. Link the cells in the PP&amp;E and intangibles, capitalized accounts receivable and operating lease schedules to the appropriate cells in the balance sheet and income statement.</li> </ol>
Prepare the statement of cash flows	<ol style="list-style-type: none"> <li>1. Prepare the statement of cash flows from operating activities, investing activities and financing activities with the exception of borrowings and repayments of debt.</li> <li>2. Prepare the debt worksheet with each tranche of debt and learn how to write “IF” and “MIN” statements, revolver cash needs and repayments and cash waterfall payments.</li> <li>3. Link the cells in the debt worksheet to the appropriate cells in the balance sheet, income statement and statement of cash flows from financing activities.</li> <li>4. Link the ending cash balance on the statement of cash flows with the ending cash balance on the balance sheet.</li> </ol>
Prepare the summary pages	<ol style="list-style-type: none"> <li>1. Test the financial model to ensure stability and that the balance sheet balances under all scenarios.</li> <li>2. Prepare and analyze the summary operating, credit and equity valuation pages after linking them to the appropriate cells in the projection model.</li> </ol>
Introduction to LTM, M&A and recapitalization	<ol style="list-style-type: none"> <li>1. Prepare an LTM and normalization of earnings analysis of the income statement.</li> <li>2. Introduce a transaction financial model for a merger, acquisition, divestiture, LBO and debt or equity recapitalization.</li> </ol>
Introduction to technical analysis	<ol style="list-style-type: none"> <li>1. Introduce how to develop a trading strategy which includes an analysis of (i) trends, (ii) reversal and continuation patterns, (iii) volume indicators such as OBV, (iv) moving averages such as the 50- and 200-day, and (v) oscillators such as RSI and MACD.</li> </ol>

## Academic Integrity

Our undergraduate Academics Pillar states that ***we take pride in our well-rounded education and approach our academics with honesty and integrity***. Indeed, integrity is critical to all that we do here at NYU Stern. As members of our community, all students agree to abide by the NYU Stern Student Code of Conduct, which includes a commitment to:

- Exercise integrity in all aspects of one's academic work including, but not limited to, the preparation and completion of exams, papers and all other course requirements by not engaging in any method or means that provides an unfair advantage.
- Clearly acknowledge the work and efforts of others when submitting written work as one's own. Ideas, data, direct quotations (which should be designated with quotation marks), paraphrasing, creative expression, or any other incorporation of the work of others should be fully referenced.
- Refrain from behaving in ways that knowingly support, assist, or in any way attempt to enable another person to engage in any violation of the Code of Conduct. Our support also includes reporting any observed violations of this Code of Conduct or other School and University policies that are deemed to adversely affect the NYU Stern community.

The Stern Code of Conduct and Judiciary Process applies to all students enrolled in Stern courses and can be found here: <https://www.stern.nyu.edu/uc/codeofconduct>.

To help ensure the integrity of our learning community, prose assignments you submit to Brightspace will be submitted to Turnitin. Turnitin will compare your submission to a database of prior submissions to Turnitin, current and archived Web pages, periodicals, journals, and publications. Additionally, your document will become part of the Turnitin database.

## General Conduct & Behavior

Students are also expected to maintain and abide by the highest standards of professional conduct and behavior. Please familiarize yourself with Stern's Policy in Regard to In-Class Behavior & Expectations (<http://www.stern.nyu.edu/portal-partners/current-students/undergraduate/resources-policies/academic-policies/index.htm>) and the NYU Student Conduct Policy (<https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-student-conduct-policy.html>).

## Grading Guidelines

At NYU Stern, we strive to create courses that challenge students intellectually and that meet the Stern standards of academic excellence. To ensure fairness and clarity of grading, the Stern faculty have agreed that for elective courses the individual instructor or department is responsible for determining reasonable grading guidelines.

## Student Accessibility

If you will require academic accommodation of any kind during this course, you must notify me at the beginning of the course and provide a letter from the Moses Center for Student Accessibility (212-998-4980, [mosescsa@nyu.edu](mailto:mosescsa@nyu.edu)) verifying your registration and outlining the accommodations they recommend. For more information, visit the CSA website: <https://www.nyu.edu/students/communities-and-groups/student-accessibility.html>.

## Student Wellness

Our aim is for students to be as successful academically as they can, and to help them overcome any impediments to that. Bookmark the NYU Stern Well-being Resource Hub (<https://www.stern.nyu.edu/wellbeing>) for existing services at NYU and Stern covering a wide variety of topics including financial well-being, relationship well-being, mental well-being, and more. Any student who may be struggling and believes this may affect their performance in this course is urged to contact the Moses Center for Student Accessibility (see also the Student Accessibility section of this syllabus) at 212-998-4980 to discuss academic accommodations. If mental health assistance is

needed, call the NYU's 24/7 Wellness Exchange hotline at 212-443-9999. Furthermore, please approach me if you feel comfortable doing so. This will enable me to provide relevant resources or referrals. There are also drop-in hours and appointments. Find out more at

<http://www.nyu.edu/students/health-and-wellness/counseling-services.html>.

### **Name Pronunciation and Pronouns**

NYU Stern students now have the ability to include their pronouns and name pronunciation in Albert. I encourage you to share your name pronunciation and preferred pronouns this way. Please utilize this link for additional information: [Pronouns & Name Pronunciation](#).

### **Religious Observances and Other Unique Situations**

NYU Stern is committed to ensuring an equitable educational experience for all students regardless of identity or religious/cultural background. The observance of religious and cultural holidays/traditions and the recognition of unique circumstances - such as serving as a caregiver - are important aspects of this commitment. Please review all class dates at the start of the semester and review all course requirements to identify any foreseeable conflicts with exams, course assignments, projects, or other items required for participation and attendance. Please contact me within the first two weeks of the class semester to discuss any potential conflicts.

#### ***\*Or if full attendance is required in your class as long as the university is holding classes:***

While NYU Stern is committed to ensuring an equitable educational experience for all students regardless of identity or religious/cultural background, New York University determines when the institution is open for classes. If the observance of religious and cultural holidays/traditions and/or the recognition of unique circumstances - such as serving as a caregiver will prevent you from attending class, please be aware that this particular course requires 100% attendance. Please review all class dates to ensure you can attend all of them. If you identify any foreseeable conflicts with class attendance, exams, or other items required for participation and attendance, it is strongly recommended that you do not take this class.