Tools and Resources for Capstone

TOOLS AND RESOURCES FOR CAPSTONE

AMANDA MCEACHERN GAUDET AND MACKENZIE COLLINS

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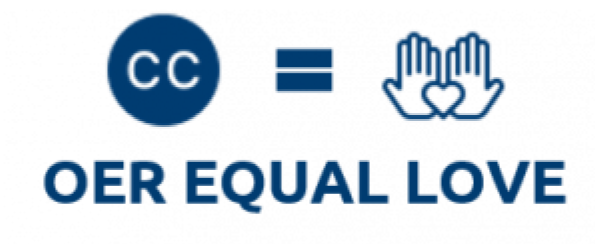

OER Equal Love

Thank You!

Thank you to the students employed by the OE Lab for working hard to make this book a reality. Congratulations on your achievement!

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About the Open Education (OE) Lab

Ontario Tech University is proud to host the OE Lab – a student-run, staff-managed group that brings content and technological expertise to the timely creation of high-quality OER that will be used directly in an Ontario Tech course by Ontario Tech students.

If you adopt this book, you will be using a work created as experiential learning and employment opportunity. Please let us know if you are using this work by emailing oer@ontariotechu.ca.

ACCESSIBILITY STATEMENT

The Open Education (OE) Lab is committed to providing course resources that are free, open, and available to anyone who wishes to use them. As such, we strive to make all our resources accessible and easy to use.

Accessibility Features of This Resource

The web version of **Tools and Resources for Capstone** has been designed with accessibility in mind by incorporating the following features:

- It has been optimized for people who use screen-reader technology.
  - all content can be navigated using a keyboard
  - links, headings, and tables are formatted to work with screen readers
  - images have alt text
- Information is not conveyed by colour alone.
- All embedded videos have captions available.
- The resource is available to download in multiple formats.

Conformance Status

The Web Content Accessibility Guidelines (WCAG) defines requirements for designers and developers to improve accessibility for people with disabilities. It defines three levels of conformance: Level A, Level AA, and Level AAA. **Tools and Resources for Capstone** is fully conformant with WCAG 2.1 level AA. Fully conformant means that the content fully conforms to the accessibility standard without any exceptions.

Feedback

We welcome your feedback on the accessibility of this resource. If you encounter accessibility barriers, please feel free to contact us by email at oer@ontariotechu.ca

PART I

WELCOME TO CAPSTONE

Welcome to our Capstone Tools and Resource Guide.

Our tool is designed to help students complete their Capstone Study projects in disciplines associated with the business. The materials, however, could be applicable to business projects in any course. Our goal was to provide templates, mini-courses and documentation to support independent project work.

We developed this guide to help students working on Capstone projects feel comfortable working independently, having guidance and tools to prepare them for all the steps along the path on the exciting journey putting their education to use on a real-world industry problem.

The presented materials will help to give you a direction for your project and provide insights as you continue through the process. Initiating and planning the project are often the largest challenges and these materials are designed to help.

The Guide and tools are set up to provide a suggested format for tackling a project, based on good project management principles and guidelines

General Success materials such as research, writing, analysis, and presentation skills

Project-specific materials, giving ideas of frameworks, potential solutions, and how to approach some sample problems in different discipline areas.

The materials provided include,

- Industry best practice tools and licenses that are free or low cost to students as well as instructions on how to access them
- Templates and check sheets
- Worksheets for additional learnings
- Video modules provide guidance on how to walk through different types of projects
- Suggested research goals and deliverables

We have provided the material in multiple formats so that it meets many different learning needs. If you find something and would like to see it further let us know.

What Is A Capstone Study Project?

"The Capstone Study Project provides students who have successfully completed three years of study with opportunities to develop a comprehensive understanding of the technology, environment, markets and operations of a real organization through the application of theory and knowledge learned.

Based on a best-fit model, as a member of a selected student team you will:

- Study a real business or organization.
- Complete a comprehensive analysis and evaluation of the business issue.

Develop suitable recommendations that solve and/or address a particular problem or group of problems."

(Ontario Tech University, 2022)

1.

BADGES AND CERTIFICATES

We have researched and identified badges or certificates that can be used to refresh your knowledge or learn new skills or tools in order to have a successful Capstone Experience. The badges and certificates not only you to support your projects, but also to continue to build your resume for graduation. Below you will find a list of Organizations we have identified for use. The actual suggested badges or certificates can be found in the respective modules.

Quickbooks

Tutorial Videos
Training & Certification

Microsoft Learn

Microsoft Learn offers on-demand, self-paced courses to teach students new technology concepts. They teach practical skills such as web development, node.js, Python, PowerShell, Azure and more using interactive modules, and paths. Educators can get free access to Microsoft classroom materials and curriculum.

HubSpot Academy

HubSpot Academy offers free, online training in marketing, inbound sales, and customer service skills. They have certifications, singular topic courses, and bite-sized lessons in tops such as Digital Marketing, Customer Journey Mapping, Google Ad Campaigns, Business Analytics and more.
HubSpot Academy Course Library
HubSpot Academy Certifications

Coursera

Coursera for Campus Basic offers online learning with free access to hands-on projects and a full course for every student. Coursera Basic offers more than 3,600 courses and Guided Projects. With Guided Projects, students can master skills through flexible, project-based, learning.

Unity Learn

Unity Learn is a library created by a game development company, Unity Technologies, to allow interested learners to gain background, context, and skills to begin creating in the Unity Editor. Unity Learn hosts over 750 hours of beginner, and more advanced, learning opportunities.

InsightSoftware.com (Previously Dundas BI)

"The Dundas solution is a flexible, end-to-end BI platform that offers software providers the ability to customize dashboards, reports, and visualizations. It was designed to operate as a one stop shop for self-service analytics, with integration into multiple data sources. Built with open architecture, Dundas BI makes it easy for software vendors to build, extend, and embed white-label data analytics solutions. Insight software plans to leverage the Dundas platform to enhance its existing Logi solutions, notably adding a strong extract, transform, and load (ETL) engine and pixel perfect reporting." (InsightSoftware.com)

Academic Program

2.

TOOLS FOR SUCCESS

Tools for success are industry-recognized options that are free or low-cost for students and educators. We have provided descriptions of the process for students or faculty members to gain access to classes. We have not listed costs as this can fluctuate, but have provided links. We will work to keep this updated each year. If you happen to find a broken link please let us know and we will work to correct it.

Microsoft 365

Students and educators are eligible for Microsoft Office 365 Education for free, including Word, Excel, PowerPoint, OneNote, and now Microsoft Teams, plus additional classroom tools. All you need is a valid school email address. Start building apps, explore artificial intelligence, make the most of big data, and build your developer skills with free access to professional tools. Students get credit with an Azure for Students account. Higher education students can get personalized help navigating their career journey with Career Coach in Microsoft Teams for Education, powered by LinkedIn.

Atlassian

Jira Software	Jira Work Management	Jira Service Management	Statuspage
Halp	Confluence	Bitbucket	Sourcetree
Bamboo	Fisheye	Crucible	Crowd

Apply for Classroom cloud by completing the Classroom Request Form. Atlassian's self-managed Data Center products and Atlassian-built apps are free for use by collegiate and graduate students and teachers within a classroom setting. Atlassian also offers classroom cloud licensing at 75% off the list price to qualifying higher education institutions for use anywhere. Please note that Classroom cloud pricing includes Atlassian core products and apps and Statuspage.

Courses and Guided Projects
Getting Started with Jira (Angelo Paolillo)

Bitbucket Cloud

Bitbucket Cloud provides free subscriptions to qualifying higher education institutions. Apply by completing the Bitbucket Cloud Academic Application.

Airtable

Over 200,000 organizations have built applications on Airtable to modernize their workflows and deliver better business outcomes.

Courses and Guided Projects
Create a Project Tracker with Airtable (Harrison Kong)

Perforce

Perforce Software delivers solutions across DevOps designed to help increase competitive advantage by addressing quality, security, compliance, collaboration, and speed — across the technology lifecycle.

Helix Core

Manage, track, and store all your digital assets — including large binary files with Helix Core. Perforce version control — Helix Core tracks and manages changes to all your digital assets — code, video, large binary files, IPs, and more.

Helix QAC

Helix QAC is a C/C++ static code analyzer for functional safety and coding standard compliance.

Helix ALM

The Helix ALM suite includes modules for different phases of development: requirements management (Helix RM), test case management (Helix TCM), and issue management (Helix IM). Helix ALM provides simple, quick traceability for complex product development.

Hansoft

Plan, track, and deliver work using Agile methods (Scrum, Kanban) with Hansoft— the software made for game devs by game devs. Hansoft is free for up to 5 users. Hansoft User Guide. Students can also take advantage of the free version of HelixCore for their small teams. Helix Core is free for up to 5 users & 20 workspaces.

Grammarly

Compose clear, mistake-free writing with Grammarly's AI-powered writing assistant.

Loom

Loom is an effective educational tool that is available for free to students and institutions. It is a platform that can be used to screen and video recording to establish communication. Some features of Loom are collaboration, commenting, video sharing, animation previews, etc.

Microsoft Imagine

Microsoft Imagine provides students with free developer tools, resources, and more to equip them with skills and knowledge that will be helpful to them career-wise. Simply create a student account and verify student status to access developer resources, contests, trainings and download the same tools and products used by professional developers. It includes applications like SQL Server, Visual Studio, MS OneNote, Visual Studio Professional, VS Community, Windows Embedded, and Windows Server.

Microsoft also holds contests that students can participate in. They can win great prizes and have access to great opportunities such as the Microsoft Student Partner program.

HubSpot

HubSpot's Education Partner Program is for colleges and universities that want to bring the theory, practice, and technology used by growing businesses into their classrooms. Access marketing and sales software, free for academic use. Students can combine strategy with execution to create and apply digital marketing and sales strategies, just like professionals do. Start a course from scratch or improve an existing one with free, open, educational resources like certifications, syllabi, lesson plans, and exercises. Peer-tested, industry-approved. Up-to-date, relevant, and easy to integrate.

Eligibility

1. You must be actively teaching a credit-bearing course at an accredited university
2. Your course must count towards a degree at a 2-year, 4-year, or post-graduate institution
3. You would like to use free HubSpot Academy content or HubSpot software to supplement your course(s)
4. You can watch a quick 30-minute video within 10 days of applying.

Tools and Templates

Free Meeting Scheduler App	Social Media Tools	Email Tracking Software	Sales Email Automation
Ads Software	Email Marketing Software	Lead Management Software	Pipeline Management Tools
Sales Email Templates	Help Desk Software	Free Online Form Builder	Free Chatbot Builder
Free Live Chat Software	Marketing Analytics	Free Landing Page Builder	Website Grader
Make My Persona	Email Signature Generator	Blog Ideas Generator	Invoice Template Generator
Marketing Plan Generator	Free Business Templates	Industry Benchmark Data	Software Comparisons Library

Courses and Guided Projects

Service Hub Software: The Service Hub Software Certification demonstrates your ability to execute an inbound service strategy using HubSpot's Service Hub. This certification course consists of six lessons that discuss customer journey mapping, and HubSpot tools such as help desk, knowledge base, and customer feedback. To showcase your knowledge, you'll be assessed through practical exercises and quizzes at the end of each lesson. At the end of the final lesson, you'll take a 60 question, multiple-choice exam to earn your certification.

HubSpot CMS for Marketers: Learn how to use HubSpot CMS Hub to create a high-performing website. Learn how to design and create a user-friendly, high-performing website with CMS Hub. Optimize your website and content strategy for search engines, and track your site's performance over time. Leverage the power of the HubSpot CRM with your CMS to personalize your website experience.

HubSpot Marketing Software: To do inbound marketing well, you need to start your journey with the marketing software the right way. It's a big platform with a lot of tools, and to get the most value out of them, you need a foundation of knowledge and an understanding of how they all work together. These lessons will equip you with the fundamental understanding you need to do marketing well using HubSpot.

HubSpot Reporting: Learn how to incorporate data-driven decision-making at your organization with the use of the HubSpot reporting tools. This certification course consists of eight lessons that discuss data literacy, and HubSpot reporting tools across the CRM, Marketing Hub, CMS Hub, Sales Hub, and Service Hub. To showcase your knowledge, you'll be assessed with quizzes and worksheets at the end of each lesson. At the end of the final lesson, you'll take a 60 question, multiple-choice exam and a hands-on practicum to earn your certification.

Adobe Creative Cloud

Adobe has a special plan for students that want to use any of their products.

Includes:

	Acrobat Pro	Photoshop	Illustrator	InDesign	Premiere Pro
After Effects	Lightroom	XD	Animate	Lightroom Classic	Dreamweaver
Dimension	Audition	InCopy	Character Animator	Capture	Fresco
Bridge	Adobe Spark	Premiere Rush	Photoshop Express	Photoshop Camera	Media Encoder
Aero	Prelude	Lightroom Web	Scan	Fill & Sign	Acrobat Reader

Sage

Get hands-on experience and certification with Sage professional accounting software, with options for instructors and students. Includes Sage Accounting, Sage 50 Accounting and Sage 300.

Slack

Slack is a cloud-based software that focuses on how to collaborate in the workplace. It seeks to combine with other products your organization uses. And to increase productivity by making communication easy among teams in the workplace.

Students can use the free trial of Slack, which should offer more than enough features to get them acquainted with the application. Through the Slack for Education program, Slack offers an 85% discount off any of their paid plans to qualified educational institutions and student groups.

Discord

Discord is a group-chatting platform originally built for gamers that have since become a general use platform for many kinds of communities. Popularly used as a communication tool for voice, video, and text. Users communicate in private chats or as part of communities called "servers".
https://youtu.be/ODX3xa5xb3M

Davinci

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QuickBooks

QuickBooks allows you to track expenses and income, create invoices, accept payments, organize receipts, track mileage, get business insights, track time, pay employees, and track inventory. Students at accredited academic institutions are eligible for one-year student registration.

Lucidchart

Lucidchart brings you intuitive and dynamic graphic organizers like timelines, mind maps, and Venn diagrams. Lucidchart is free for current students, teachers, and faculty (with your official school email address).

MURAL

An online whiteboard with a focus on digital-first collaboration, MURAL creates space for your team to collaborate visually and problem-solve faster with an easy-to-use digital canvas.

Student	10 Members Unlimited Murals 25 External Guests Unlimited Visitors
Classroom	100 Members Live Teachers' Lounge Webinars

Miro

Miro is the essential online whiteboard. Use simple tools to create diagrams, draw freehand, capture ideas on sticky notes, add snapshots of webpages, leave comments, and more. With integrations to Dropbox, Google Drive, Microsoft Teams, and more, as well as a mobile app – Miro is extremely user-friendly.

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One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=57#oembed-3

Figma

Figma is loved by professional websites and graphic designers because it's both powerful and easy to use. Whether you're just getting started with design or adding a new tool to your arsenal, Figma helps you get projects done today and preps you for the real world tomorrow. Figma is also a hub for design templates, UI kits, classroom resources, and more. Explore practical materials from professional designers, brands, and more.

The free education plan offers:

- Unlimited version history
- Unlimited editors and viewers
- Custom file/user permissions
- Shareable team libraries
- Classroom resources
- Access to a community group

Courses and Guided Projects

Getting Started with Figma (by Heidi Baker)

3.

CLASS EXERCISES

Amanda McEachern Gaudet and Mackenzie Collins

A key element in the planning and design of an experiential learning activity is establishing a clear link between the exercise, the lecture, and the course-learning objectives. The relationship among the preceding class elements is the critical difference between the students viewing the exercise as a useful part of the class or seeing it as a waste of class time (Olsen, 2006). The idea here is thus for the experiential learning activities within to be designed to support specific learning objectives related to Project Management, and other relevant subject matters for the Capstone students, either directly from the activity or indirectly as a link to the lecture or resource chapter covered after the activity.

Research has clearly demonstrated that experiential learning can be critical to enhancing the overall learning process.

Rather than cover only rote-level learning objectives, students are given more time to think about the material and apply newly learned concepts to the [activity] they just experienced. Proponents of critical thought often advocate that the ability to contemplate and question ultimately leads to deeper levels of understanding. When properly designed, the ELA will emphasize the complexities in the material that are often not covered via traditional lecture or textbook readings. Our experience has been that the majority of the lecture would cover only the basic levels of knowledge (Olsen, 2006).

Agile Project Management Game

One person is the project manager, the other is the team member.

First-round, tell the project manager that they are going to tell the team member which direction to take for each step. The goal is to get the team member to a goal location (i.e. door) but don’t make it obvious to the team member what the end goal is. See how many pairs of people make it to the door in 30 seconds.

Second round, this time, the project manager is going to start the 30 seconds by explaining to the team member that their goal is to get to the goal location, then let them walk there. See how many pairs of people make it to the door in 30 seconds.

Lesson learned: If a project manager is collaborative in providing a vision towards a goal and trusts the team to put in the effort needed (i.e. Agile sprints), they will be more effective towards that goal. The alternative is micro-management and lack of vision/empowerment, which was the first round experienced.

Source

Delegation Exercise

Ask your students to think of the most unpleasant task that they have to do in their work or school. Tell them that today they'll have the chance to delegate it to someone else. Ask them to think about how they would explain their unpleasant tasks to someone on the team, how they would check that the task is done, and how they would encourage the person to complete the task.

Divide your students into teams of 3: delegator, task doer, observer. Share the delegation observer sheet with delegators to help check how well the delegator explains the task. After the delegator explains the task, the task doer jots the task down, and the observer checks the points in the delegation observer sheet. Allow some time for the team to discuss the results. Change the roles in teams and repeat the task. The game has 3 rounds so that every participant tries every role.

Delegation Observer Checklist

- Did the delegator explain how important the task was?
- Did the delegator explain the purpose of the task?
- Did the delegator explain the steps on how to complete the task?
- Did the delegator review the task with the employee on its completion?
- Did the delegator encourage the employee to do the task?
- Did the employee ask any questions about the task? If not, did the employee understand how to complete the task?

Discuss the activity within your team.

- Which task is the most unpleasant in the team? What was the most challenging/easiest part of the task?
- Who is the best delegator on the team?
- Who is the 'best doer' in the team?
- Which part of the game was the most difficult?
- Which role was the most difficult?
- What could you do to improve the delegators/doers performance for each participant?

Source: Mike Kulakov, *Everhour*

Create a Game, Game

Have students split up into groups. Each group is tasked with designing a very simple game or puzzle.

The teams will be given 1 hour of time to work together to decide upon a game, delegate tasks, determine requirements. Part of what is expected is to identify the requirements, resources, and manpower needed if the game were to be actually executed/manufactured, as well as taken to market (i.e. its fit, demographic and value).

After teammates have delegated roles and responsibilities, they are tasked to have an equal amount of time to complete their tasks individually. Whether it's designing a prototype, testing the game, completing market research, or determining the rules of the game.

In the end, the team should come together for a final 5 minutes to put their work together and present it. The final discussion should include, where things were difficult for the team, and what they would do differently.

Key Lessons:

- Proper planning at the beginning ensures a quality final product.
- Lack of communication when doing individual work without updating each other on progress is detrimental to success.

NASA Survival on The Moon

Instructions for Faculty:

Group members should be instructed to first rank the objects individually without communicating with team members (–10 min) and then again in their group (15 min.). In the group part of the exercise, all groups should be instructed to employ the method of group consensus, which requires each group member to agree upon the rankings for each of the 15 survival items before the item becomes a part of the group decision (Hall and Watson, 1970). Instructors should ensure that students interact only within groups and no cross-talking occurs between groups.

The students should be placing these numbers in a chart such as this:

Item	**Step 1: Your Individual Ranking**	**Step 2: Team Ranking**	**NASA's Ranking**	**Difference between Step 1&3**	**Step 5 Difference between Step 2&3**

After revealing the correct answers (below) and allowing teams to calculate their scores, record the team score and the lowest individual score from each team. Subtract the team score from the individual score; this provides the "synergy" score. Ask the students in the teams with negative synergy scores why they think their team performed as it did. Then ask the teams with positive synergy scores why they think their teams performed well. Listen for evidence of good collaboration in the teams with positive synergy.

Importance: Makes students work as a team and manage conflicting opinions to create a unified front. At the end teams are ranked on how well they did and you have a discussion about why certain teams performed better then others. You can discuss collaboration in the teams with positive synergy.

Instructions for Students:

You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. However, due to mechanical difficulties, your ship was forced to land at a spot some 200 miles from the rendezvous point. During reentry and landing, much of the equipment aboard was damaged and, since survival depends on reaching the mother ship, the most critical items available must be chosen for the 200-mile trip.

Below are listed the 15 items left intact and undamaged after landing:

1. Box of matches
2. Food concentrate
3. 50 feet of nylon rope
4. Parachute silk
5. Portable heating unit
6. Two .45 calibre pistols
7. One case of dehydrated milk
8. Two 100 lb. tanks of oxygen
9. Stellar map
10. Self-inflating life raft
11. Magnetic compass
12. 20 litres of water
13. Signal flares
14. First aid kit, including injection needle
15. Solar-powered FM receiver-transmitter

Your task is to rank order them in terms of their importance for your crew in allowing them to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important, and so on through number 15 for the least important.

ANSWERS

Item	Ranking	NASA's Reasoning
Box of matches	15	Virtually worthless — there's no oxygen on the moon to sustain combustion
Food concentrate	4	Efficient means of supplying energy requirements
50 feet of nylon rope	6	Useful in scaling cliffs and tying injured together
Parachute silk	8	Protection from the sun's rays
Portable heating unit	13	Not needed unless on the dark side
Two .45 calibre pistols	11	Possible means of self-propulsion
One case of dehydrated milk	12	Bulkier duplication of food concentrate
Two 100lb. Tanks of oxygen	1	Most pressing survival need (weight is not a factor since gravity is one-sixth of the Earth's — each tank would weigh only about 17 lbs. on the moon)
Stellar map	3	Primary means of navigation – star patterns appear essentially identical on the moon as on Earth
Self-inflating life raft	9	CO_2 bottle in military raft may be used for propulsion
Magnetic compass	14	The magnetic field on the moon is not polarized, so it's worthless for navigation
20 litres of water	2	Needed for replacement of tremendous liquid loss on the light side
Signal flares	10	Use as distress signal when the mother ship is sighted
First aid kit, including injection needle	7	Needles connected to vials of vitamins, medicines, etc. will fit special aperture in NASA space suit
Solar-powered FM receiver transmitter	5	For communication with mother ship (but FM requires line-of-sight transmission and can only be used over short ranges)

SCORING: For each item, mark the number of points that your score differs from the NASA ranking, then add up all the points. Disregard plus or minus differences. The lower the total, the better your score.

0 – 25 excellent

26 – 32 good

33 – 45 average

46 – 55 fair

56 – 70 poor — suggests use of Earth-bound logic

71 – 112 very poor – you're one of the casualties of the space program!

Compare individual and group rankings – How many are better off? Why did more survive? What were the factors for higher group survival?

Team dynamics – How did the group work together? Why did the group work well (or not)? What were the group dynamics that positively contributed to a higher survival? How did you embrace the diversity of opinions? How did you contribute to the team? What role did you assume during the game?

Source: Hall, J., & Watson, W. H. (1970). The effects of a normative intervention on group decision-making performance. *NASA.*

Fishbone Exercise for Problem Identification

Dr. Kaoru Ishikawa, a Japanese quality control statistician, invented the fishbone diagram, also known as an Ishikawa diagram or a cause and effect diagram. When drawn, it looks like the skeleton of a fish, hence the name. It is an analytical tool often used for diagramming effects and their causes. It identifies root problems when a process is not working properly (Ishikawa, 1963).

Instructions: Draw a fish skeleton on a large piece of paper or whiteboard. Label the problem on the fish's head. Let's say you have problems with late deliveries. The bones protruding from the fish's spine will each name a major category that affects the problem area. For instance, if "Materials" was one of your main categories, you brainstorm things in materials that cause late deliveries.

Key problems will likely show up in more than one category when you have completed the process. Once the most probable causes have been identified, order them from most probable to least probable.

Source: Malinda Zellman, *BizFluent*

The Big Picture Exercise for Team Collaboration

Source: OrangeWorks

Instructions:

Students are divided into their groups. Each individual in a group is each responsible for painting a small segment of the groups' Big Picture. Having no idea what the final image will be, teammates must work together to ensure that all lines meet and colours match up.

Upon completion, the final masterpiece is unveiled for the first time to the inevitable sound of thundering applause and enthusiastic cheers.

Key Learning Outcomes

Teams must adopt a 'big picture' approach to ensure that the final result is a success. This creative team bonding exercise requires effective colour coordination and collaboration is required for each canvas to fit perfectly. If they are unsuccessful, it can show the detriment to a final project when there is lack of team communication.

- Quick thinking and strategising
- Inspires creativity
- Developing networking skills
- Requires collaboration and communication

Square Up: Individual Time Management Exercise

Instructions:

- Print 3 pages with 24 squares that represent the 24 hours of a day.
- Share the 1st page with the participants
- Explain that each square represents one hour of a day
- Ask them to fill out the squares with their routine activities. E.g. eating 4 hours = 4 squares, sleeping 7 hours = 7 squares, etc.
- Share the 2nd page with the participants
- Ask them to fill out the squares on the second page with the non-working time they spend. E.g., coffee-

breaks, talk shops, calls to mom, checking social networks, etc.

- Share the 3rd page with the participants
- Ask them to summarize the data from the 1st and 2nd pages on the 3rd page. Use different colors to tell them apart. e.g., green for the 1st page, blue for the 2nd, red for the 3rd.
- Explain that the uncolored squares = ‘productive time.’

Points to discuss:

- How could you re-evaluate your time?
- Would you change anything in your statistics?
- Are there any steps you could take to increase your productive time?
- How would you rearrange your time to have some extra time for rest?

The Sky’s The Limit

Source: Olson, J. , University of St. Thomas, Minnesota

Materials:

Time needed is roughly one hour for the completion of this activity.

- Spaghetti noodles (approximately one 4 oz. box per group)
- Miniature marshmallows
- bowls or cups for miniature marshmallows
- Tape measure or yardstick
- 50 sheets of paper secure with a binder clip
- Clock and/or timing device

This activity emphasizes the complexities involved within the project triangle and the trade-offs when crashing a project network. Demonstrates the critical elements and challenges associated with managing a project. The activity may also be used to demonstrate the construction of a work breakdown structure, project network diagram, and a Gantt chart.

The basic framework of the activity involves student teams designing, developing, and constructing skyscrapers composed entirely of spaghetti and miniature marshmallows within a specified time frame.

Learning Objectives for the Preceding Project-Management Lecture:

1. Explain the project planning cycle and the three major components of the project triangle: time, cost, and performance.
2. Explain the common project organizational structures (pure project, functional project, and matrix project) and their relationship with project management.
3. Construct and explain a work breakdown structure in project management.
4. Construct and explain a project network diagram and a Gantt chart.
5. Apply the critical path method (CPM) to analyze a project network.
6. Analyze networks with deterministic times including:
    1. Calculate the expected duration of a project;
    2. Calculate earliest start time (ES), latest start time (LS), earliest finish time (EF), and latest finish time (LF) for any activity;
    3. Calculate the critical path(s) for a project;
    4. Calculate the duration of all paths; and
    5. Calculate individual activity slack time.
7. Analyze the trade-offs between time and expediting costs by crashing a project network (i.e., the concept of "crashing").

Instructions

This activity is designed to be used by teams ranging from three to five students; with four students an ideal group size.

- A potential exercise variant would be to intentionally assign different-sized teams. This would provide a forum to discuss the implication of the team size on the resulting structures.

PART II
YOUR CAPSTONE PLAN

Planning your Capstone can be a daunting task, many students often are unsure of exactly what is expected. Throughout this guide, you will find different tools and steps to help you through your Capstone Journey. We will talk about your planning process, your execution, and delivery. We have also included suggested deliverables for many types of projects.

4.

PROJECT MANAGEMENT

Why is Project Management important?

It provides the direction and organization for projects. It identifies what is included and excluded, resources needed and a scheduled plan.

What is a Project?

A Project is a temporary endeavour undertaken to create a unique product, service, or result. Subsequently, project management is then the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements – as set out by the **stakeholder**s. (Project Management Institute, 2021)

Project managers are organized, passionate, and goal-oriented individuals who understand what projects have in common, with a strategic role in how organizations succeed, learn and change.

Courses and Guided Projects

Coursera Introduction to Project Management This course is designed to give you the fundamentals of Project Management. You will learn the basic principles of Project Management by managing a fundraising event for your local farmers market. You will designate responsible team members to help you, build a timeline and see the different ways that you can manage the project. Together, we will walk through not only the documentation but also the theories and reasoning behind each task. You will learn how to look at a large project and break it down into manageable pieces and then how to build an action plan so that you hit your deadlines with your team *(Megan Peck, Coursera).*

How Do We Define Success in a Project?

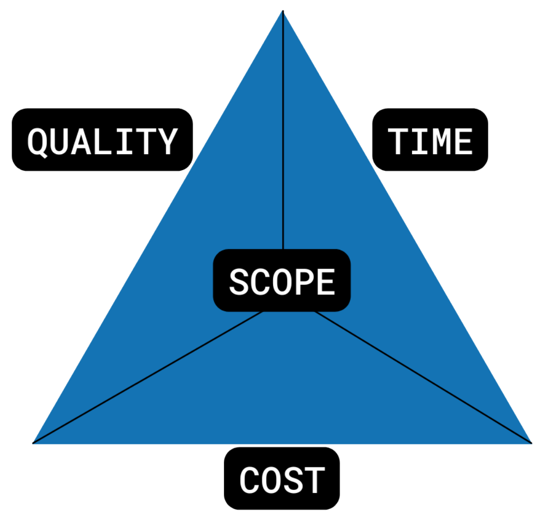
Project success can be defined as the management of the project within the **constraints** set out by the **stakeholders**. If you can consider the 4 factors listed below and outline them for your project with agreement from the stakeholders you will be on your way to success.

- **Scope:** Document the scope of work to be delivered. To assist in defining the scope use documentation such as RFP, sales proposals, business requirements, functional specifications, etc. to set and limit the scope.

  In-Scope is what the project will include meeting the requirements of the project goals

  Out of Scope excludes responsibilities, activities, deliverables, or other areas that are not part of the project.

- **Time:** Time management involves assessing and developing a schedule and timeline for project completion.
- **Quality:** Quality involves determining policies, objectives and responsibilities so that the project will satisfy the needs for which it was undertaken. It is what the customer or stakeholder needs from the project deliverables.
- **Cost:** Cost allows creation, and approval, of the budget for the project in order to control spending. It requires, cost calculations, estimated resources required for the project, cost spreadsheets, etc.



Iron Triangle

Projects can be looked at in 5 phases:

1. Initiation
2. Project Planning
3. Project Execution
4. Project Monitoring
5. Controlling

PART III
PROJECT INITIATION AND PLANNING

Initiation is generally handled by the program. The program coordinators will select the projects and decide if they are feasible for a Capstone Project Team, and if there are mutual benefit opportunities.

1. Business Problem/Opportunity Defined
2. Potential Solution Defined
3. Project Team Formed

Planning is the most important part so that you then have a way to execute and monitor. Start by understanding the goal of the project – this is the "why" the project is being taken on. Having a clear vision on this will help with the 'What' of the project – what is the result wanted? (i.e., to increase revenue, drive traffic to the site, provide analysis of data, train individuals, etc.). In this, it is also important to understand who we are doing this for.

Project planning is where the students begin to engage and should be completed with the stakeholders. A project may look different depending on the group of students assigned and their specialty. The main questions to be addressed by students in this phase.

Accountability comes through assigning specific people to tasks, so it is clear to everyone who is responsible for completing them.

Courses and Guided Projects

OpenLearn University Course: Planning A Project

Gantt charts, critical path analysis, SMART objectives and estimation skills are just some of the topics covered in this course, planning a project, to help you understand how to plan for a project.

You will gain an appreciation of the range of planning techniques available and the situations in which it is appropriate to use them. *(Planning a Project Course, 2019)*

Planning can be approached by asking a series of questions:

Tools and Templates
Project North Star Template (Facebook, 2004)

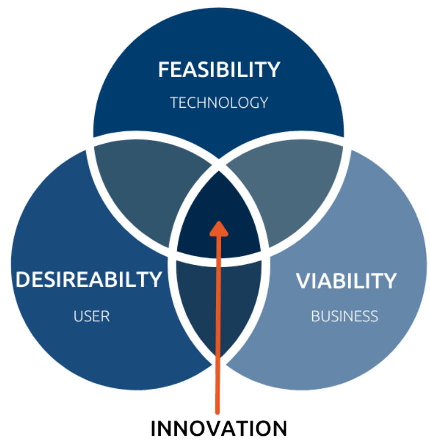
- What actions are needed?
  - What is the end deliverable the client is expecting?
  - How can we break this into manageable tasks?
  - What is the dependency of the activities?
  - Will you need primary research? This includes additional time and planning and may require additional timing if results are not achieved.
  - Do you have alternatives for risk mitigation if something cannot happen?
- When are these actions needed by?
  - Is there an event or milestone that must be met for the client?
  - What other competing responsibilities do the students have that must be managed?
  - Is there any equipment required, or lab time? When is this available? Must it be booked in advance?
- Who is going to do them?
  - What is the skillset of the team?
  - Can anyone do the necessary tasks, or must it be someone specific?
- What resources are required?
  - What is required from the client?
  - Are labs and/or equipment necessary?
  - Is there anything that needs to be purchased or accessed?
- What is within the scope of the project? What is outside the scope of the project?
  - What other work is not going to be done?
- How will we know if it is succeeding?
  - What metrics can we track?
  - What are the Key Performance Indicators (KPI'S)? What are the factors that show the project's success?
  - How can we keep everyone updated?

5.

DESIGN THINKING

Dr. Steve Marsh; Amanda McEachern Gaudet; and Mackenzie Collins

Design Thinking and Understanding Client Needs



Many of the industry partners or clients who will request services are not experienced in the area that they are requesting work in. When they describe what they are looking for from you and your team, it may have a different focus compared to what is actually being requested. When designing the plan as a team, you need to ensure you are on the same page as your client. Your goal is to understand their needs and desires out of the project, along with what is possible given the constraints of the course. Design Thinking is a tool that will not just help you with connecting to your client, but also with many areas of your career and life.

Design thinking is a human-centric approach to solving problems by creating new ideas.

Design thinking is an iterative process in which we seek to understand the user, challenge assumptions, and redefine problems in an attempt to identify alternative strategies and solutions that might not be instantly apparent with our initial level of understanding. At the same time, Design Thinking provides a solution-based approach to solving problems. It is a way of thinking and working as well as a collection of hands-on methods. (Dam, R. F., & Siang, T. Y.)

It works for any business challenges like defining new solutions, strategies and roadmaps, organizational structures, and processes.

This video from Harvard Business Review (2015) provides a quick overview.

INNOVATION = DESIRABILITY + FEASIBILITY + VIABILITY

(Brown, 2009)

3 Pillars of Design Thinking

1. Empathy

    The problems you are trying to solve are rarely your own; they are those of particular users. Build empathy for your users by learning their values. Discover the emotions that drive user behaviour. Uncover user needs (which they may or may not be aware of). Identify the right users for the appropriate purpose. Use your insights to design innovative solutions.

1. Ideation

    Ideate is the mode in which you generate radical design alternatives. Ideation is a process of "going wide" in terms of concepts and outcomes—a mode of "flaring" instead of "focus". The goal of ideation is to explore a wide solution space—both a large quantity and broad diversity of ideas. From this vast repository of ideas, you can build prototypes to test with users. When ideating, your team needs to fluctuate between times of focus and flare. Idea generation is a moment to "go wide", while evaluation/selection of ideas is a time for narrowing-in.

1. Experimentation

    Testing is your chance to gather feedback, refine solutions, and continue to learn about your users. The test mode is an iterative mode in which you place low-resolution prototypes in the appropriate context of your user's life. **Prototype** as if you know you are right, but test as if you know you are wrong.

(Design Think Bootleg, Standford University, 2018)

Why Design Thinking Is Useful

- It captures the mindsets and needs of the people for who you are creating
- It paints a picture of the opportunities based on the needs of these people
- It leads you to innovative new solutions – starting with quick, low-fidelity prototypes that provide learning and gradually increase in fidelity

Areas of Application

- Product design

- Service and experience design
- Business design
- Leadership
- Organizational change

The Design Thinking Process

(Design Think Bootleg, Stanford University, 2018)

Step 1: Empathize

- **Observe** how users interact with their environment. Capture quotes, behaviours and other notes that reflect their experience. Watching users gives you clues as to what they think and feel— what they need.
- **Engage** users directly—interact with and interview them. Engaging users reveals deeper insights into their beliefs and values.
- **Immerse** yourself in your users' experience. Find (or create if necessary) ways to immerse yourself in specific environments to understand firsthand, for who you are designing.

Step 2: Define

The define mode is when you unpack your empathy findings into needs and insights and scope a meaningful challenge. Based on your understanding of users and their environments, come up with an actionable problem statement: your **Point Of View**. Your Point of View is a unique design vision that is framed by your specific users. Understanding the meaningful challenge at hand, and the user insights you can leverage is fundamental to creating a successful solution.

> Change a problem into an opportunity by asking: *How might we...?*

The define mode explicitly expresses the problem you strive to address. In order to be truly generative, you must reframe your challenge based on new insights gained through your empathy work. This reframed Point of View, or problem statement, can then be used as a solution-generating springboard.

Step 3: Ideate

Harness the collective perspectives and strengths of your team. You ideate in order to transition from identifying problems to exploring solutions for your users. Ideation is leveraged to:

- Generate ideas: a moment to "go wide"; while evaluation/selection of ideas is a time for narrowing-in. Step beyond obvious solutions and drive innovation.
- Uncover unexpected areas of exploration.
- Create fluency (volume) and flexibility (variety) in your innovation options.

Video Modules

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Step 4: Prototype

A **prototype** can be anything that takes a physical form. In the early stages, keep prototypes inexpensive and low resolution to learn quickly and explore possibilities. Prototypes are most successful when people (the design team, users, and others) can experience and interact with them. What you learn from interactions with prototypes drives deeper empathy and shapes successful solutions. Prototyping is often thought of as a way to test functionality, but it serves many other purposes:

- Empathy gaining – Prototyping deepens your understanding of users and the design space.
- Exploration – Develop multiple concepts to test in parallel.
- Testing – Create prototypes to test and refine solutions.
- Inspiration – Inspire others by showcasing your vision.

Step 5: Test

Create authentic experiences for users to test your prototypes.

- Learn more about your user. Testing is another opportunity to build empathy through observation and engagement—often yielding unexpected insights.
- Refine your **prototype**s and solutions. Testing informs the next iterations of prototypes. Sometimes this means going back to the drawing board.
- Test and refine your **Point of View**. Testing may reveal – not only did you get the solution wrong, but you also framed the problem incorrectly.

Courses and Guided Projects
Build Inclusive User Personas in Miro (Tricia Bagley, Coursera) Create Customer Personas in Canva (Dvija Maurer, Coursera) Draw Out Creative Ideas with Reverse Brainstorming in Miro (Tricia Bagley, Coursera)

Tools and Templates

HubSpot Persona Tool	Design Thinking Canvas	Mural User Story Map Template
Miro User Persona Template	Empathy Diamond	Mural Persona Grid
Mural Persona Profile Template	Mural Empathy Map Canvas	Board of Innovation Persona Template
Mural Assessing Stakeholder Stories Template	How Might We Tool	Persona Generator @ HubSpot

6.

PROJECT CHARTER

The most important things to discuss at this stage are: **what a Charter is**, **what is included in a Charter**, **why a Charter is important**, and **how a Charter is developed**.

What is a Charter?

"A document issued by the project initiator or **sponsor** that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities." (PMI, 2004, 368)

Why is a Charter Important?

The project **charter** is an indispensable part of the Six Sigma project, and the foundation for the project's success. The creation of the project charter begins at the top of the organization as management creates a one-page document that summarizes the project. The charter is a dynamic, living document and can be updated as information becomes available in the DMAIC process. When developing a charter to documents we need to ensure we understand the goal of the project so that we can ensure the deliverables will help obtain it.

The charter provide parameters for the project – think of it as being similar to a contract, between a team and a client. It is important the organization and people working on the project understand why they are doing it. This will also help them to stay focused on the outlined goals and objectives. This is done through questions such as:

- What are the benefits of this project?
- Who will be impacted by the project?
- How will we know the project is successful?

How to Develop a Charter

You will have a **Project Sponsor** or "client". For a Capstone project, this is likely your industry partner or perhaps a faculty member supporting the project within your institution.

This person should be providing the initial SOW (**Statement of Work**) or objectives to define their goals.

The first step of a project should be to have a kick-off meeting. In this meeting you will do the following:

- Review the **SOW** and any other documents provided
- Ask about 'Project Objectives'
- Understand who will be impacted and potentially the outcomes they are looking for once the project is completed
- Contrast requirements between proposal and expectations — try to be as specific as possible
- Set up deliverables, with **milestones** and checkpoints
- Identify success criteria and create a schedule (tools with automatic reminders will help with this aspect)
- Processes for executing monitoring, controlling and overall management of the project

INPUTS	**TOOLS AND TECHNIQUES**	**OUTPUTS**
Project Statement of Work	Expert Judgement	Project Charter
Business Case	Facilitation Techniques	
Agreements		
Enterprise environmental factors		
Organizational process assets		*(Source: PMI, 2004, 368)*

Project Goal

The project goal the business need, opportunity, or problem that the project was undertaken to address – i.e., the project justification. This should not be the deliverable (or "what you are doing"), but rather what the project is trying to accomplish (the "why") . i.e. – Company XYZ wants to increase their revenues by 25%

through social media campaigns in 2020. Goals should be SMART – specific, measureable, attainable, relevant and time-bound (HubSpot SMART goals).

Simon Sinek and his concept of the Golden Circle is critical in your understanding of what you are try.ing to accomplish and more importantly 'Why'.

Video Modules

Simon Sinek Golden Circle

Deliverables and Research Goals

Provide a high-level list of "what" needs to be done to reach the goals of the project. The overall project should be split into 3 or 4 main deliverables, with 5-6 sub-deliverables or "tasks". Each **deliverable** should be sufficiently detailed and measurable so that the Project Team will understand what needs to be accomplished. Describe the deliverable using action words (verbs) such as "deliver, provide, create, research, etc.

Steps to Define Deliverables:

1. Provide a high-level list of "what" needs to be done to reach the goals of the project.
2. Break this into 3-4 smaller defined pieces (sub-deliverables) along the way.
3. Each deliverable should be detailed in a way that both the client and team have a clear view of what is to be provided. This should include things such as format, suggested length and items included.

The charter deliverables will need to define what will be handed in at each phase and what they will look like in detail.

What Do Deliverables Look Like?

Deliverable #1: Research Phase

This may include primary or secondary research (i.e. interviews versus scholarly analysis). For some projects in which both primary and secondary research are necessary, this phase would consist of solely primary research and secondary research would fall into deliverable #2.

Deliverable #2: Action Phase

For those projects only requiring one form of research, this stage begins the analysis and summary of research into actionable recommendations.

For projects which require secondary and primary research, the secondary research would be conducted as this deliverable – with a thought towards application and filtering of secondary research to the findings from deliverable #1. Note – most institutions have a requirement for specific approval of primary research endeavors – you should check with your professor before proceeding into any primary research.

Deliverable #3: Presentation Phase

For all forms of projects, this phase is the conclusion of the project. Therefore, this should be the deliverable in which the client is presented with a result that seeks to satisfy the original goal of the project. The presentation format is at the client's discretion but can be in the form of a drafted policy, recommendation report, presentation, or other. The idea is that the students hand a hard copy of the accumulation of all their work to the client in a format that allows the client to easily see the original goal as accomplished.

Many projects will not be completed fully over one semester and will have an additional team picking up where you left off. It is okay to clearly identify a portion of a project or game you are completing over the semester. This means as part of your final document you should have a clear handoff for the next team, including a drive where the files would be accessible.

Research Goals

Data: Information to be used for research purposes.

- Will the use of data/information aid in your project?
- How will you obtain the data/information?
  - **Secondary Research** – requesting existing data from external organizations/government – Library resources or Google Scholar are excellent for this. You need to make sure you are using quality reputable resources
  - **Primary Research** – through human interaction (in-person/online/phone) with participants. This can be difficult to manage due to the inherent risks. It requires a solid plan and Research and ethics board approval.
  - Program Evaluation and/or Quality Improvement data
  - Your client – data that they have already collected internally
- Having considered the above information, are you planning on conducting and/or analyzing research to aid in the project goals and deliverables?

There should be metrics included in this section. i.e., we plan to survey 100 people over the course of 3 weeks, we will analyze 10 different companies, we will provide 20 marketing pieces, etc. These will help in developing your updates or check-ins throughout the term.

Scope

Scope – The extent of what a project will produce (product scope) and the work needed to produce it (project scope).

Document the scope of work to be delivered. To assist in defining scope, use documentation such as RFP, sales proposals, business requirements, functional specifications, etc. to set and limit the scope.

In-Scope is what the project will include, meeting the requirements of the project goals.

Out of Scope excludes responsibilities, activities, deliverables, or other areas that are not part of the project.

Scope Creep: Adding additional features or functions of a new product, requirements, or work that is not authorized (i.e., beyond the agreed-upon scope).

Top 5 Causes of Scope Creep, Larson, R. & Larson, E. (2009).

Assumptions, Constraints & Dependencies

Identify the **assumptions** that were made to define the **scope** and to complete the **deliverable**s. Assumptions are elements that need to be 'true' in order for your project to proceed.

Objective: Set the boundaries and address how the **triple project management constraint** (scope, time, cost) could be impacted or managed (Baratta, A., 2006).

List any **constraints** (potential factors that will impact the delivery or make it difficult to manage the project) on the project or dependencies (on resources or funding to the project). Consider time, cost, dates, rules, and regulations, etc. as **constraints** or **dependencies** to the project.

These should be specific to your project.

- What would limit you?
- What information/data/access are you expecting provided by the client?
- What do you need the client to do by when? IE give feedback, post to social media, provide reports?
- Provided funding? Tools? Equipment?
- What tools will you be engaging with for your project? (Hootsuite, oculus, raspberry pi, databases etc)

Include any required equipment or resources that will be needed and who is expected to be providing them.

Related Documents

Reference any related documents that were used to define scope and assumptions. Include a description, along with a copy/attachment/link to the documentation.

Project Organizational Structure

Tools and Templates

Board of Innovation Stakeholder Map

Miro Stakeholder Map

Mural Stakeholder Map

Think of this as a contact list for the project. It should include you client (and other secondary contacts), as well as your course contacts ([professor, TAs, mentors, etc.).

Identify the key **stakeholder**s and team members by function, name, and role. One team member will be designated **Team Lead** and will act as the main point of contact for communication for the project external partner.

What's a Stakeholder?

- A stakeholder is an individual, group or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project (Project Management Institute, 2013).
- Key Stakeholders can include: customers/users, sponsors, portfolio manager, program manager, PMO, Project Manager
- It is important to remember to identify the project stakeholders in your **Charter**.

Confidentiality Agreement

It is important to understand that there is a confidentiality agreement on your projects and you should be cautious with how you save, share or use the information provided. Consider things such as:

- Keep anonymous the identity of the interviewed respondents, including the **project sponsor** (client) and any associated party of the sponsor.
- Not use the respondents' contact information for any other purpose than to conduct the present study.
- Not use the collected data for any purpose other than to complete the present study.
- Not provide the collected data to any third party other than our client and the professor, and to keep all the research information confidential by not discussing or sharing it in any form or format (eg. disks,

tapes, transcripts) with anyone other than our client and the professor. The research results will be discussed with the faculty involved in the Capstone course at the final presentation only.

- NOTE – you should never sign any external confidentiality documentation without consulting with your professor or faculty advisor.

Project Authorization

Once you have completed your charter, it should be reviewed by the main stakeholders for acceptance; this is what will 'kick off' the project and allow you to begin work. This can come as an email from your client confirming acceptance, but it is most preferred to have a written signature and/or verbal agreement in a meeting.

7. WORK BREAKDOWN STRUCTURE (WBS)

When planning out the timing of a project, we need to fully understand what work is to be completed. The first phase of this would be a Work Breakdown Structure.

The Work Breakdown Structure (WBS) defines the scope of the project and breaks the work down into components that can be scheduled, estimated, and easily monitored and controlled. Subdivide a complicated task into smaller tasks, until you reach a level that cannot be further subdivided.

You stop breaking down the work when you reach a low enough level to perform an estimate of the desired accuracy. Each descending level of the **Work Breakdown Structure** represents an increased level of detailed definition of the project work.

WBS describes the products or services to be delivered by the project and how they are decomposed and related. It is a deliverable-oriented decomposition of a project into smaller components. It defines and groups a project's discrete work elements in a way that helps organize and define the total work scope of the project.

A WBS also provides the necessary framework for detailed cost estimating and control, along with providing guidance for schedule development and control.

Courses and Guided Projects

Creating The WBS

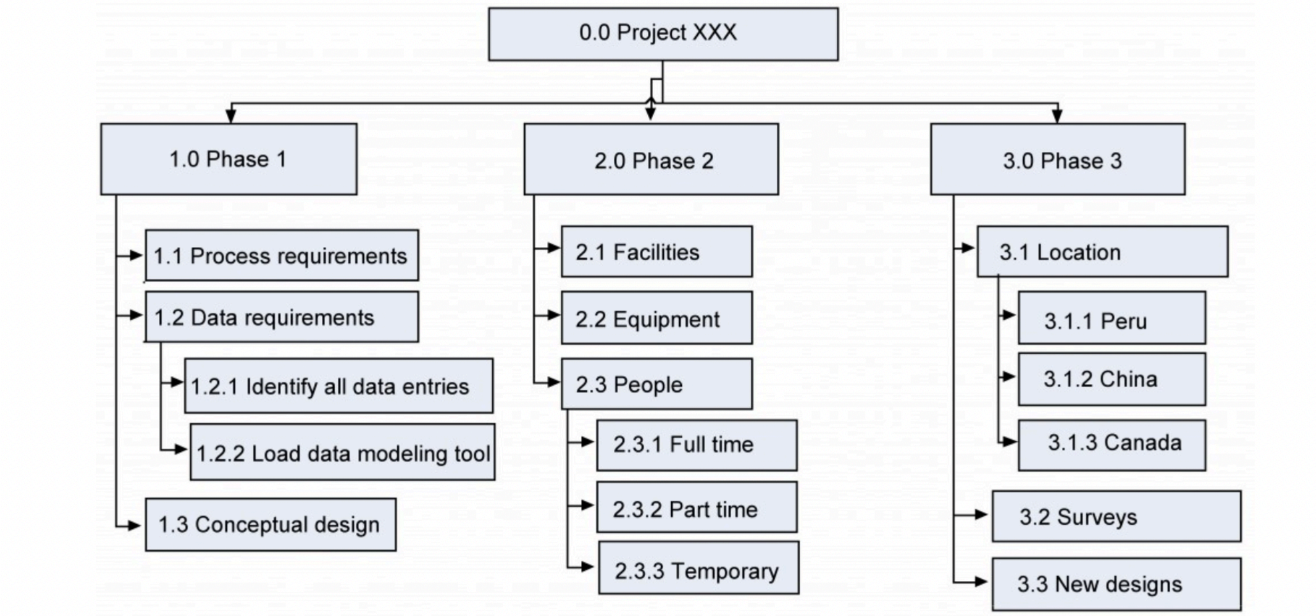
Creating the Precedence Network Diagram

by Hamid Aougab, *Coursera*

The WBS creation involves:

1. Listing all the project outputs (**deliverable**s and other direct results)
2. Identifying all the activities required to deliver the outputs
3. Subdividing these activities into sub-activities and tasks
4. Identifying the deliverable and **milestone**(s) of each task
5. Identifying the time usage of all the resources (personnel and material) required to complete each task

The **100 percent rule** is the most important criterion in developing and evaluating the WBS. The rule states that each decomposed level must represent 100 percent of the work applicable to the next higher (parent) element. In other words, if each level of the WBS follows the 100 percent rule down to the activities, then we are confident that 100 percent of the activities will have been identified when we develop the project schedule. When we create the budget for our project, 100 percent of the costs or resources required will be identified.



Many projects are structured or organized by project phases. Each phase would represent the first level of the WBS and their deliverables would be the next level and so on.

(Watt, A. 2014)

8. PROJECT SCHEDULE

A project schedule is typically presented in the form of a **Gantt Chart**, but can be found in many other formats. A project schedule is a timetable that shows the (planned and actual) start and end date of all project tasks, how the tasks relate to each other and which team members or other resources are responsible for delivery (Jones, 2009, PMI). We take our work breakdown structure, assign resources, assign responsibilities to specific individuals and plan the timing accordingly.

Courses and Guided Projects

Developing a Project Schedule
(Hamid Aougab, Coursera)

Why Is It So Important?

Scheduling activities helps to identify **dependencies** – the logical relationship between tasks. Without dependencies, you cannot possibly prioritize activities. Task dependencies help you build a logical order for all activities involved in your project.

Let's say you want to make a sandwich. You can break the steps down like this:

1. Slice bread
2. Spread mayo on bread
3. Add cheese/meat/lettuce
4. Combine

You would not spread the mayo on the bread before slicing it, right?

Therefore, the task of spreading the mayo is **dependent** on the task of slicing the bread.

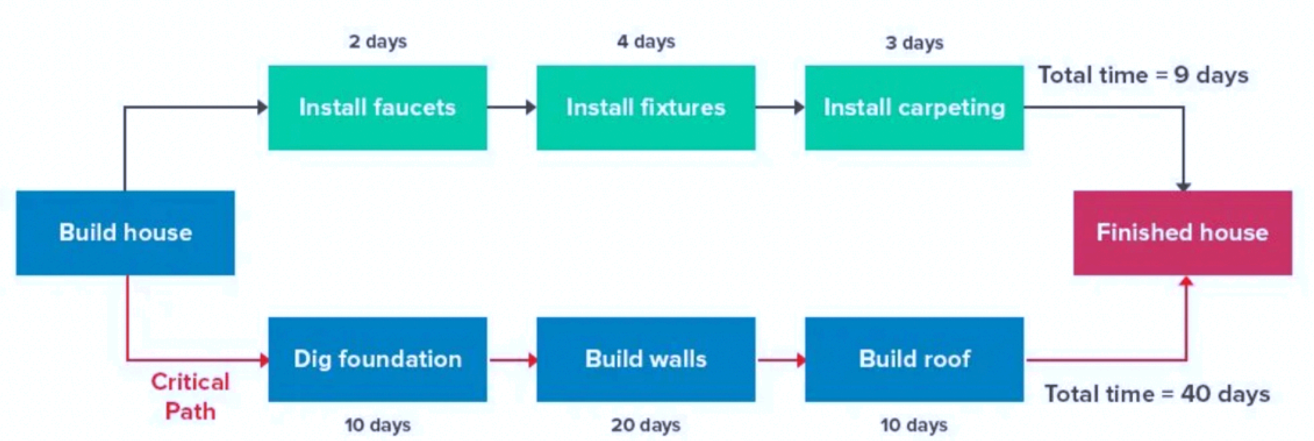
Dependencies occur when there is a relationships between tasks. Every activity in the schedule will have at least one predecessor and one successor, except for the very first activity and the very last activity. The next task, or group of tasks, cannot begin until the preceding work has been completed (Max Wideman, 2000-2017).

Critical Path Method (CPM)

The **critical path** is defined as the "longest path through the project" (the minimum entire time to complete the project). While there may or may not be slack in the schedule, the schedule's longest path to completion is through the critical path (Jones, 2009, PMI).

The CPM is a methodology that helps to determine the most efficient path possible for the project. To implement this method, you follow a 6-step process:

1. **Critical Path Method (CPM)**. Create a list of all activities involved.
2. Build a sequence of activities, considering all the critical dependencies associated with the project.
3. Draw a network diagram. The boxes represent your project's activities and the arrows indicate the relationships between them.
4. Estimate individual activity duration.
5. Find your critical path – the longest path to complete your project.
6. Update the critical path diagram as needed as the project progresses.



Program Evaluation and Review Technique (PERT)

The **PERT method** helps you estimate the duration of a project based on 3-point estimates, from which you can calculate the average durations and standard deviations. PERT analysis is commonly represented on network diagrams, like CPM. But where CPM focuses on one-time estimates, PERT uses 3-point estimates for every duration:

- Most likely duration

- Pessimistic estimate
- Optimistic estimate

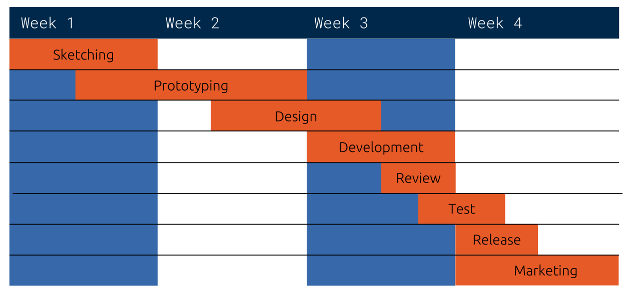
Based on these estimates, you can forecast an average duration for the whole project. The PERT method suggests you multiply both the optimistic and pessimistic estimates by 1 and the most likely estimate by 4. Then, you divide the result by 6.

$$PERT\ Estimate = \frac{Optimistic + (4 * \ Most\ Likely) + Pessimistic}{6}$$

If you wanted to take a more pessimistic approach, you could multiply the optimistic estimate by 1, the most likely estimate by 4, and the pessimistic one by 3, and divide by 9. Or you could increase the ‘scoring’ on the most likely estimate.

9.

GANTT CHART



In order to manage the scheduling of your project, tools such as Gantt charts are important. When timing is limited and there are activities that have dependencies, it is key to stay on track. The Gantt chart is a tool that allows us to visually see our schedule and compare our actual progress to our planned progress. It is also a key tool for accountability. By assigning specific people to the task, if things are not being completed it is clear who is to be doing the work. A Gantt chart is a horizontal bar chart that shows a project's planned schedule and tasks or events over the assigned timeframe.

It helps you see your entire project timeline and track milestones as you go. Many Gantt charts can also show **dependencies**. They can include multiple team members, colour-coded tasks, calendars, and more.

In essence, the horizontal axis of a **Gantt chart** represents the time, and the vertical axis shows the tasks involved with the project. Identical units of distance along the horizontal axis represent equivalent units of time. Then, you showcase each task with a bar. The length of these bars represents the time estimated for each task and their positioning on the chart represent how they're scheduled.

Key Components

Tasks/Item (Deliverables)

There are individual activities (or tasks) that live at various stages of completion. Each task can stand on its own, and you can also group tasks together to create sub-items.

Tools and Templates

Excel Gantt Chart Template

Monday.Com Gantt Chart

Wrike Gantt Chart

ClickUp Gantt Chart

Asana Gantt Chart

Planned Date/Timeline

The date and duration (planned timeline) of each task are often displayed in days/weeks/months, but they can also be represented in minutes/hours. The length of each rectangle tells you how long a task is expected to take, known as the duration of the task.

Actual Start/End

While it is anticipated you will stay on track with your plan, there may be tasks or elements that start or end early/late. Instead of changing the entire schedule, it is important to note these "actual" points as a separate piece of information.

Owner

This is the person assigned to and responsible for the task (can be more than one person). Tasks should not be repeatedly assigned to the entire team (unless the task requires all to participate), as this minimizes accountability and responsibility of individuals.

Status

The status represents what stage each task currently resides in. These can include up next, planned, stuck, waiting for, completed, delayed, working on, etc.

Progress

The status represents what proportion of the work is completed within the designated timeline and is usually represented as a percentage.

Milestones

The overarching tasks do not have a duration, and generally mark the end of a certain part of a project.

Dependencies

Often represented as arrows that link two tasks together (optional).

Things to Remember

While planning takes time and may not produce tangible client deliverables, it will help you have a well-organized execution which will allow you to identify roadblocks as they come along and ensure completion of requirements. Give yourself some flexibility in timing to allow for adjustments that may arise and try to identify them as early as possible.

Courses and Guided Projects
Create a Simple Gantt Chart Using Google Sheets (Jamie Schroeder, Coursera) Visualize Project Milestones with Gantt Charts in Miro (Tricia Bagley, Coursera) Create a Simple Gantt Using Excel (Andres Rodriguez, Coursera) Project Scheduling: Estimate Activity Duration (Hamid Aougab, Coursera)

10.

COMMUNICATION PLAN

In project management, a project can consist of technical and social elements. The technical element consists of the core skill necessary for the deliverables of a project. Technical knowledge helps identify requirements, development, design of solutions, and technical specifications. Social elements include interactions between individuals or groups. Communication exists during project execution—from the initiation phase to the evaluation phase—by and between organizational or external **stakeholder**s (B. J. Galli, 2019).

> Communication is the key factor to ensure project success.

You should be communicating with your client, your team and any others involved. Different people have different levels/types of expectations for communication. By identifying their preferred frequency, method and amount you will be able to schedule and manage it as part of your workflow.

For efficient communication and the management of communication, one must consider the context of the project, the technical demands of the project, and the stakeholders from whom the needed resources may be sourced. By understanding the stakeholder and their needs, the project manager can be effective in planning the level of detail and type of information to communicate. (B. J. Galli, 2019).

Include a **Communication Plan** to set out how and when communication is expected between parties. It will allow you to establish a clear communication plan for your project.

Tools and Templates

Monday.Com Communication Plan Template

Excel Availability Template

Availability

It is important that everyone on the project communicates their regular schedule in the early phases of the project. By creating an availability chart, the team can easily create their **communication plan**. This also makes it easier to adjust the communication schedule if needed if everyone's availability is known prior.

Communication Plan

Devising a meeting schedule of expected recurring meetings with the project team and/or client can be beneficial in ensuring all parties are aware of upcoming events and plan their schedules accordingly. This minimizes the possibility of individuals missing important benchmarks or expectations.

Mural Team Standup Meeting Template

LettuceMeet

11.

KEY PERFORMANCE INDICATORS

Key Performance Indicators (KPIs) – also called Key Success Indicators (KSIs) – are quantifiable measures that a company or industry uses to gauge and compare performance in terms of meeting their strategic and operational goals. KPIs vary between companies and industries, depending on their priorities or performance criteria.

Benefits of KPIs

- Performance effectiveness
- Accuracy, a reflection of the process, efficacy in delivering the outcome
- Effects of change can be monitored reliably, repeatedly, and accurately

How to Design KPIs

Tools and Templates

Developing KPIs (Springer)

Key Performance Indicators in Project Management

Miro S.M.A.R.T. Template

- Should be clearly linked to the strategy
- Must provide the answers to the most important questions
- Should be primarily designed to empower and provide those working on the project with the relevant information to learn.

KPIs are usually developed following the S.M.A.R.T. criteria, originally created by George T Doran:

- Specific
- Measurable
- Attainable
- Result-oriented or Relevant
- Time-bound

Identification of KPIs

- Related to strategic aims
- Identify what makes the organizations succeed or fail
- Controllable and accountable
- Qualitative and quantitative
- Long-term and short term
- Consider stakeholder needs
- Identify important aspects
- Establish company goals
- Select performance indicators and metrics
- Set targets and track performance

Types of KPIs

- **Process KPI** – measures the efficiency or productivity of a business process, i.e days to deliver an order.
- **Input KPI** – measures assets and resources invested in or used to generate business results, i.e., expenses from research and development, costs of employee training, quality of raw materials.
- **Output KPI** – measures the financial and nonfinancial results of business activities, i.e. revenue.
- **Leading KPI** – measures activities that have a significant effect on future performance.
- **Lagging KPI** – a type of indicator that reflect the success or failure after an event has been consumed. Most financial KPIs, measure the output of past activity.
- **Outcome KPI** – reflects overall results or impact of the business activity in terms of generated benefits, as a quantification of performance, i.e. customer retention, brand awareness.
- **Qualitative KPI** – a descriptive characteristic, an opinion, a property, or a trait. i.e. employee satisfaction.
- **Quantitative KPI** – a measurable characteristic, resulted by counting, adding, or averaging numbers.

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12.

PROJECT MANAGEMENT SOFTWARE

Monday.com

Monday.com is a colourful, intuitive project management software. Monday.com is a fully customizable Work OS that helps design a project management platform that meets the specific needs of the user. Its visual interface is easy to scan for information and the platform has a relatively low learning curve. There are 8 different layouts available to visualize your board including Kanban, Gantt, calendar, workload, and more. With several integration features, it makes remote teamwork go smoothly.

Importantly, Monday.com features the ability to assign specific team members to tasks, by making them the 'owners' of the task. This not only creates accountability, but also alters the type of notification the assigned individuals receive. This allows team members to specifically be notified regarding tasks they are assigned to, if they have otherwise interacted with a task through a comment, or if they have chosen to be notified specifically.

Although Monday.com provides users with access to 200+ templates, it also provides students with a template to use as a framework that matches grading criteria. Additionally, Monday offers free use of its platform for students and educators who apply.

Getting Started on Monday

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Create Workspace

- On the left-hand side, click the three dots and add a new workspace for your project
- Add all your group members to your new workspace (and your professor, TA, or client)

Create a Board

- Add boards and templates
- Add and move columns
- Add, delete, edit, and move items
- Add sub-items
- Add, delete, and customize groups
- Add customized board views

Collaborate

- Write updates and tag anyone on your team.
- What you can do in the update section
- Integrate with your emails

Track

- Setup your account notifications
- Learn how to set due date reminders
- Make deadlines visual with Deadline mode
- Track your and your team's weekly assignments

Create a Dashboard

- Create a high-level view using dashboards
- How to add widgets to your dashboard

Share

- Share board view with external people

For the Masters

- Set up integrations on your account
- Add automations to your workflow
- Set up automations for notifications
- Set up automatic actions based on status changes

MeisterTask

Use MeisterTask's Kanban-style project boards to track team progress visually and manage tasks effectively. Instantly know where tasks are in the workflow, when they are due and who is responsible for them. Your dashboard provides an at-a-glance overview of notifications, projects and upcoming tasks in a beautiful, customizable interface. Prepare for a productive day of task management with MeisterTask. MeisterTask's Gantt-style Timeline feature helps project managers drive efficiency and keep their teams aligned. Assign and schedule tasks in the calendar view to locate bottlenecks easily and ensure deadlines are kept.

Education pricing options are available.

ClickUP

Courses and Guided Projects

Introduction to Project Management with ClickUp

Automating Sales Tasks with Zapier

An all-in-one suite to manage people, projects, and everything in between. ClickUp is a cloud-based collaboration and project management tool. Features include communication and collaboration tools, task assignments and statuses, alerts and a task toolbar.

Zapier

Zapier is an automation tool that allows users to automate several steps in their workflow without any coding. This software allows you to automate multiple tasks with a single trigger, send emails, filter tasks, convert data, and build intelligent workflows that act based on conditions you set.

Asana

Courses and Guided Projects

Asana is a unique project management software that prioritizes both team and project managers. The platform is easy-to-use and motivates all team members to manage their projects to their own benefit. Choose the project view that suits your style, and collaborate no matter where you are.

With more than 200+ integrations, you can bring together everything your team needs to communicate, collaborate, and coordinate work, from start to finish. A student-focused version of Asana is also available.

Getting Started With Asana

Write an Effective Project Objective With Asana

Improve Efficiency in Asana for Project Management

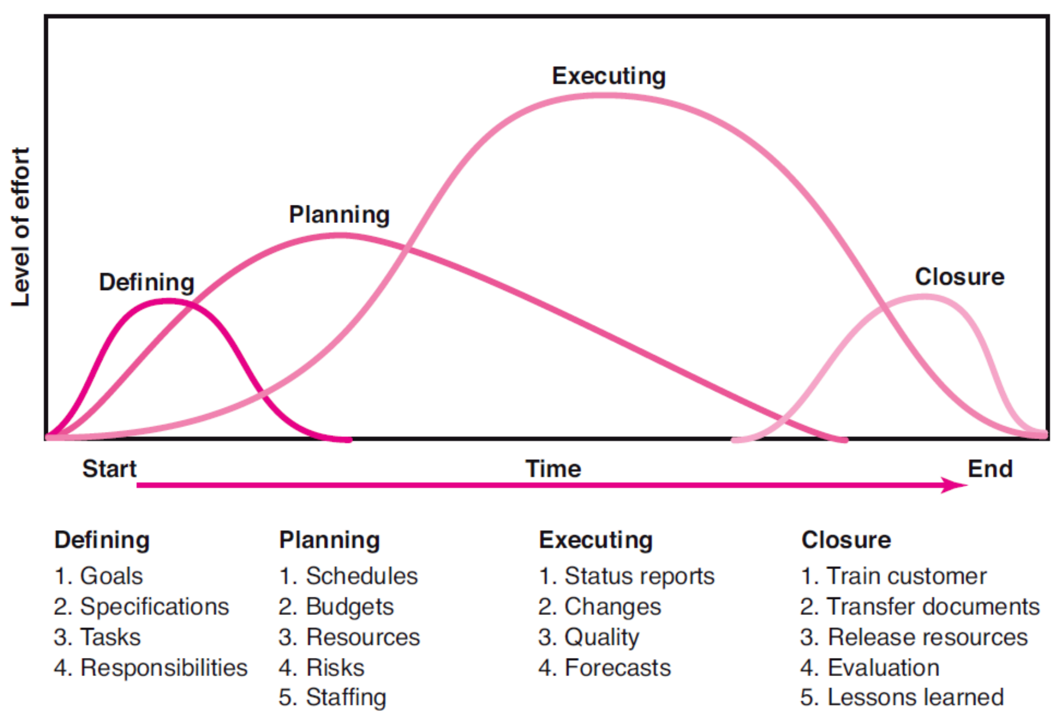
(Angelo Paolillo, Coursera)

PART IV
PROJECT EXECUTION

Once the project has been planned, next comes the fun! We are ready to execute. In the execution phase, we are completing the work we outlined in our plan and throughout our **Gantt chart**.

How do we execute a Capstone Project? Like any project, this is when the work is being completed. There are many key activities and concepts to remember during this phase:

1. You made a plan and schedule and this should guide your progress. While the deadlines may seem flexible (as your deliverable are not due for a long time), it takes time to complete various tasks. Thus the importance of making and *keeping to* a schedule. There may be dependencies out of your control that must occur at certain periods of time, so you do not want to have any elements lagging or mast0-minute.
2. Communication is key! You should have a regular reminder to have updates with your team and updates with your client (See Communication Plan chapter) . It is okay if things are not going to plan, but if no one knows they can not adjust accordingly.
3. Keep work in a shared directory to avoid redundancy (like a Google Drive) and have the ability to monitor work and progress throughout.
4. Ask for regular client feedback and be prepared to adjust if outcomes are not as expected.



Source: Project Management by Merrie Barron and Andrew Barron

13.

PROFESSIONAL COMMUNICATION

Amanda McEachern Gaudet and Mackenzie Collins

Communication is extremely important in the workplace. According to a study from Harvard University, 15% of the reason an individual gets a job, keeps a job, or advances in a job, is related to technical skills and job knowledge; the other 85% has to do with their people skills (Mann, 1918). It's not only an asset for the job, but often a necessity. Some of the top reasons why talented young professionals are getting fired in the modern era include lack of collaboration, miscommunication, lack of accountability, overconfidence, anxiety or depression, and lack of vision (Miller, 2017).

It is possible some students may have never had a job before and therefore have zero professional communication experience or tact. This, of course, is not always the case – but serves to ensure that everyone is given an opportunity to make the all-important first impression a good one.

It's recommended that you **assign a Team Leader to act as the main point of contact** with the client. Be sure to clarify this does not mean only that one student speaks with the client – but rather for the purpose that the client only must send one email to one person when requesting a meeting with the team.

Courses and Guided Projects

Business Communication: Verbal & Written Presentation Skills (OER)

For students working in a business environment, you will feel the need to learn new words and obtain new skills such as speaking on the phone in the most professional manner, creating an outstanding CV, writing letters to your partners, or making unique presentations. To do this, it's necessary to develop your business vocabulary.

Team Relationships

The Team Canvas is a strategic framework that helps team members kick off projects and align on a common vision.

Tom Wujec: Build a tower, build a team (TED.com)

Video by Amanda McEachern Gaudet

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Audience Analysis

Audiences must also be analyzed in terms of characteristics.

- **Background** – One of your most important concerns is just how much knowledge, experience, or training you can expect in your readers/viewers. If you expect some of them may lack certain background, do you automatically supply it in your document?
- **Needs/Interests** – To plan your document/presentation, you need to know what your audience is going to expect from that document. Imagine how readers will want to use your document; what they will demand from it.
- **Demographic Characteristics** – Age group, type of residence, geographic location, gender, political preference, etc.

Types of Audiences

1. **Experts** – those who know the business, organization, product, or service inside out.
2. **Technicians** – Those who build, operate, and repair items that the experts design and theorize. They may have highly technical, practical knowledge.
3. **Executives** – Those who make decisions about the product/service. Likely to have little technical knowledge.
4. **Non-specialists** – Those with no technical knowledge at all, but wish to utilize and/or understand the product/service.

More Than One Audience

To target multiple audiences, you can either:

1. Write all the sections so that all the audiences of your document can understand them.
2. Or you can write each section strictly for the audience that would be interested in it, then use headings and section introductions to alert your audience about where to find relevant information in your report.

How do you use this information?

Provide The Right Information

- Add information readers need to understand your document. Think carefully about your readers, and revise and edit your document so that you make the technical information more understandable for non-specialist audiences.
- Omit information your readers do not need. Unnecessary information can also confuse and frustrate others.

Guide Your Reader Through Your Writing

- Create topic sentences for paragraphs and paragraph groups. It can help readers immensely to give them an idea of the topic and purpose of a section (a group of paragraphs) and in particular to give them an overview of the subtopics about to be covered.
- Write stronger introductions—both for the whole document and for major sections.
- Break text up or consolidate text into meaningful, usable chunks.

- Add cross-references to important information.
- Use headings and lists.
- Use special typography, and work with margins, line length, line spacing, type size, and type style. For non-specialist readers, you can do things like making the lines shorter (bringing in the margins), using larger type sizes, and other such tactics.
- *Always consider Accessibility Requirements when creating documents, presentations, etc. Some suggestions:
    - Documents: Abilitynet.org
    - Presentations: Sigaccess.org

Business Etiquette

Responding

- Proper response time
- Out of office messages
- Formality
- Listening skills
- Avoid distractions
- Focus on the respondent and/or who is around you
- Civility
- Mindful of noise pollution
- Mindful of scent pollution

In-Person meetings

- Understand what the meeting is supposed to address/cover
- Take notes (see 'Minutes' section in this chapter)
- Keep your cell phone on silent or vibrate
    - Do not answer unless it is urgent
- Have a well-defined agenda
- Do not be late
- Be a good listener
- Speak clearly and concisely
- Predict questions or doubts
- Dress appropriately

- Ensure proper follow up is completed

Email

In business, email has largely replaced print hard copy letters for external (outside the company) correspondence, and in many cases, it has taken the place of memos for internal (within the company) communication.

E-mails may be informal in personal contexts, but business communication requires attention to detail, awareness that your e-mail reflects you and your company, and a professional tone so that it may be forwarded to any third party if needed. E-mail often serves to exchange information within organizations. Although e-mail may have an informal feel, remember that when used for business, it needs to convey professionalism and respect. Never write or send anything that you would not want to be read in public or in front of your company president.

Tips

- Specify your subject line (Make it meaningful, clear, and brief)
- Use a professional email address
- Use a professional greeting: proper salutations demonstrate respect and avoid mix-ups in case a message is accidentally sent to the wrong recipient
- Avoid "Reply All", or be vigilant about verifying who is in the recipient list
- Proofread
    - Double-check the email address
    - Review tone
    - Download Grammarly if you struggle with grammar, spell check won't catch everything!
- Avoid "ALL CAPS" or overuse of font identifiers (bold, italics, highlighting, colors, etc.)
- Take caution when attaching files – Should it be a PDF?
    - Ensure you actually attach what you state is attached
    - Verify file before sending is the intended one
- Avoid abbreviations, slang, emojis, etc.
- Close with a signature. Identify yourself by creating a signature block that automatically contains your name and business contact information
- Avoid emotional responses — never reply in anger or haste.
- Make a habit of replying to all e-mails within twenty-four hours, even if only to say that you will provide the requested information within a specified time-window
- Test links. If you include a link, test it to make sure it is working

Phone

- Identify yourself
- Ensure you are using an appropriate tone of voice
- Have a plan for what you are going to say before you call
- Speak clearly
- Avoid interruptions and eliminate background noise
- Do not be distracted by other activities
- Always return phone calls in a timely manner

Texting

Texting is not useful for long or complicated messages. Careful consideration should be given to the audience/recipient. Although texting will not be used in class as a form of professional communication, you should be aware of several of the principles that should guide your writing in this context. When texting, always consider your audience, your company/institution and choose words, terms, or abbreviations that will deliver your message appropriately and effectively.

Anticipate unintentional misinterpretation. Texting often uses symbols and codes to represent thoughts, ideas, and emotions. Given the complexity of communication, and the useful but limited tool of texting, be aware of its limitations and prevent misinterpretation with brief messages. (Gross, et al., 2019, p. 15)

Netiquette

Netiquette refers to etiquette, or protocols and norms for communication, on the Internet. We create personal pages, post messages, and interact via online technologies as a normal part of our careers, but how we conduct ourselves can leave a lasting image, literally.

Tips

- Avoid assumptions about your readers/audience. Remember that culture influences communication style and practices.
- Remember there is a person behind the words. Ask for clarification before making a judgement. Check your tone before you hit send.
- Be judicious. What you say online is difficult to retract later.
- Quote the original author if you are responding to a specific point made by someone else. Ask the

author of an email for permission before forwarding the communication.

Code of Ethics

A code of ethics is a guide of principles designed to help professionals conduct business honestly and with integrity. A code of ethics document may outline the mission and values of the business or organization, how professionals are supposed to approach problems, the ethical principles based on the organization's core values, and the standards to which the professional is held (Investopedia, 2019).

What does a Code of Ethics include?

- Business Ethics
- Employee Code of Conduct
- Code of Professional Practice
- Duty to Report

It's extremely important that you understand you should seek out clarification on areas you may not understand. It is okay to say "I do not know – but I will find out and get back to you".

Additional Resources

Promoting a Culture of Inclusion

by Dr. Becky Wai-Ling Packard, *Middlesex Community College*

How to Conduct a Meeting in an Intercultural Setting

by Linh Luong, *The Cain Project in Engineering and Professional Communication*

Ontario Human Rights Code

Protected grounds such as:

- Age
- Ancestry, colour, race
- Disability
- Marital status (including single status)
- Gender identity, gender expression
- Sex (including pregnancy and breastfeeding)

Additional Resources

Teaching Human Rights in Ontario – A guide for Ontario schools

Ontario Human Rights Code Fact Sheet

Human Rights 101 – The Ontario Human Rights Code

(*Ontario Human Rights Commission*)

Scenarios – things to consider:

What if a client offers you money to do outside work?

- Think of yourself as an employee
- Conflict of interest with the current task
- Employers will often have you sign a "Non-compete Clause" as part of your employment
- Suggest potential opportunity when the task is finished

What if a client is late to a meeting?

- Be aware and be inclusive. Sometimes lateness is cultural and not meant to be inconsiderate.
- Have a time frame
- Example: if you haven't heard anything from the client in 15 minutes, reach out to them in a direct manner – phone, text (if the client relationship includes it), email
    - If the client does not respond, send a follow up email asking to reschedule for a time that is

convenient

- If it seems to happen perpetually, look to other forms of communication and have response expectations for moving forward. This is where the dashboards are key, as they can highlight if something is being held up based on approvals.

What if a client leaves the company?

- Have backup or secondary contacts and a list of stakeholders – this should be part of your communication plan from the beginning/

Accessibility

Understanding the needs of your team, client, and important stakeholders is key to creating an environment conducive to productivity and efficiency. More than that, it is the opportunity to create a welcoming environment that encourages each individual to perform at their best.

By considering typical barriers to communication, you can plan strategies to meet the needs of the individuals. The following chart from the Open University outlines some potential changes you can make to be more inclusive of your peers:

Barrier	Strategies
Visual Impairment	• Send an electronic copy of meeting agenda, notes, handouts, slideshow, etc. prior to meetings • Choose accessible fonts and backgrounds • Design documents with accessibility in mind – use style sheets for Word documents so they are more easily navigated by screen readers. It is a simple process
Deafness	• Ensure there is enough light so that the individual can read lips • Write keywords on a board when presenting • Send an electronic copy of meeting agenda, notes, handouts, slideshow, etc. prior to meetings • Explain concepts with visual diagrams • Put captions on for video meetings/presentations
Mobility or Dexterity	• Send meeting notes after meeting, or recording of meeting • Allow time for individuals to take a break if needed during long presentations
Mental Health	• Clearly structured meetings and presentations (meeting agendas, table of contents, introductions and conclusions) • Negotiable deadlines – plan ahead to ensure that a missed meeting does not force the project to fall behind
Learning Disability	• Clearly structured meetings and presentations (meeting agendas, table of contents, introductions and conclusions) • Consistency in structure of meetings and/or presentations

14.

TEAM CONTRACTS

To prepare students for teamwork with industry clients, students will form (or be placed in) a team for the semester. The team will work together to complete the collaborative project.

A Team Contract template is usually divided into three major sections:

1. Establishing Procedures
2. Identifying Expectations
3. Specifying Consequences

The purpose of a contract is to accelerate team development, increase individual accountability for tasks completed by the team and reduce the possibility of conflict within the team. In order to accomplish this, try to be as specific as possible in each of the tasks, assigning responsibility and due dates/formats for submission. The more precise in describing team expectations, procedures and individual roles, the better chance you will have a successful experience in the course and as a team.

Effective collaboration includes, but is not limited to:

- Participating fully (in spirit and actuality)
- Participating professionally (i.e., civil discourse; abiding by the rules of academic honesty)
- Meeting responsibilities (i.e., completing assigned tasks on time and to the best of your ability)
- Taking the consequences of not abiding by the group's rules
- Giving group members appropriate credit where due
- Not giving or taking credit where it is not due (also being cognizant of academic integrity and responsibilities within it)

Once completed, the team contract should be signed by all team members and submitted (to the drop box) as part of the Charter assignment. You may find during your project that your team is not working as well as you had hoped; while this is normal you need to identify the problems quickly and work to resolve and if needed seek guidance from your responsible lead or the instructor to resolve the conflict, to allow the experience to be as positive as possible for both the team members and the client.

Template Suggestions:

Team Name & Number:
Team Lead:
Team Members: include name, majors and skill sets
I. Project Outcomes: (Identify a letter grade as a team you are expecting to attain and ensure the entire team committed to the work to achieve this grade)

III. Team Procedures

1. Day, time, and place for regular team meetings:
2. Preferred method of communication (e.g., e-mail, phone, wired phone, face-to-face, in a certain class, Google Meet etc.) in order to inform each other of team meetings, announcement, updates, reminders, problems:
3. Decision-making policy (by consensus? by majority vote?)
4. Method of record keeping (Who will be responsible for recording & disseminating minutes? How & when will the minutes be disseminated? Where will all agendas & minutes be kept?)
5. How much time per week do you anticipate it will take to make the project successful?
6. Where will you record who is responsible for which tasks?
7. How will the work be reviewed?
8. What will you do if one or more team members are not doing their share of the work?
9. What will happen if someone does not follow through on a commitment (e.g., missing a deadline, not showing up to meetings)?
10. A team member availability schedule

IV. CRITICAL REVIEW DATES
It is strongly recommended that you pre-arrange Critical Review Dates. These meetings will help to assess if you are on track and if the project is moving along as planned.

Review Date #1:
Location/Method of Communication:

Review Date #2:
Location/Method of Communication:

Review Date #3:
Location/Method of Communication:

V. Contract Agreement

After reading through this document, each member needs to initial each item and then sign the document at the end. If you disagree with these rules, then as a group amend them. They must be approved by the instructor, however. This is an official contract. Once you have signed it you are accountable.

1. Each group member agrees to show up to class and to outside group meetings on time.
2. In the event that a group member is less than five minutes late, s/he may quietly join the group without disrupting it to ask what s/he missed. It is optional for the group members to fill in the late-comer
3. Group members who are avoidably late must: ***[write out a consequence for being late.]***
4. A group member who is absent more than ___ times will be dismissed from the group. *Please note that if you are dismissed from the group you must have a meeting with your responsible lead and the instructor to discuss if enough work has been completed in order to pass the course or if alternative work can be arranged. If this is not fulfilled, students will receive an F in the course.
5. If a member submits plagiarized material and/or cheats, the group agrees to bring this to the instructor's attention immediately.
6. Each member agrees to familiarize him- or her- self with and abide by University's rules for Academic Integrity.
7. Members agree to treat one another with respect. Respect includes no name-calling. If you don't like an idea, address the idea, not the person (for example, "I don't think that idea will work because…" not "That's stupid"). In the event that a group member treats someone inappropriately, s/he will [write a consequence]:
8. In the event that a group member or members are dominating the group, it's the timekeeper's job to politely interrupt them (this is when you can interrupt) and ask that someone else speak.
9. Other rules that the group would like to add:

Name: ________________________ Signature: ________________________ Date: __________

Name: ________________________ Signature: ________________________ Date: __________

Name: ________________________ Signature: ________________________ Date: __________

Name: ________________________ Signature: ________________________ Date: __________

Additional Resources

The suggestions above were developed from the links below:

https://web.mit.edu/6.005/www/fa15/projects/abcplayer/team-contract/

http://groups.cs.umass.edu/nmahyar/wp-content/uploads/sites/8/2019/01/Team-Contract-690A.pdf

15.

RESEARCH

Being effectively able to research, using both primary and secondary methods, is a key component of almost every Capstone. The key is to remember you should be using quality academic resources. Your campus library is always an excellent source of these and the reference librarian team is always more than happy to help.

Collecting

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=404#oembed-1

Courses and Guided Projects

A/B Testing

Create an A/B web page Marketing Test with Google Optimize by Angelo Paolillo, *Coursera*

A/B Testing Course by Google x Udacity

Create Experiments for Business Research by Shalini Gopalkrishnan, *Coursera*

Surveys

Use SurveyMonkey to Create a Survey and Analyze Results by Abby Saey, *Coursera*

Create Surveys with Qualtrics by Shalini Gopalkrishnan, *Coursera*

Get Started with Microsoft Forms by Heidi Barker, *Coursera*

Create Conditional Survey Forms using Zoho Forms by Emmanuel Ibekwe, *Coursera*

Create Customer Support Data with Google Sheets by Melissa Al-Shaer, *Coursera*

Tools and Templates

Interviews

Research User Interviews Template

Empathy Interview Guide: understand the problems and concerns of customers/users

Analysis

Tools and Templates

Assumption Learning (Miro.com): Use this tool to collect and refine your learnings after testing your critical assumptions.

Feedback Grid Template (Miro.com): A tool designed to help you structure the information gathered from user testing. Identify details that you might forget with this easy canvas.

Exercises

Data Analysis Using Excel by Paula Del Ra, *Coursera*

Finding, Sorting, & Filtering Data in Excel by Judy Richardson, *Coursera*

Storytelling With Data by Shalini Gopalkrishnan, *Coursera*

Visualizations

Courses and Guided Projects

Overview of Data Visualization by Judy Richardson, *Coursera*

Design and Visualize Impact Metrics with Miro by Tricia Bagley, *Coursera*

Data Visualization with Plotly Express by Snehan Kekre, Coursera

Create Charts and Dashboards Using Google Sheets by Ishita Sinha, *Coursera*

Create a Custom Marketing Analytics Dashboard in Data Studio by Carmen Rojas, *Coursera*

Interactive Statistical Data Visualization by Ryan Ahmed, *Coursera*

How to Make an Infographic From Survey Data Sara McGuire (2016) *VennGage*

PART V
CONTROL AND MONITORING

Planning, monitoring, and controlling a project progress is an ongoing project management responsibility. From the very beginning of a project, a project manager must decide the type of data that needs to be collected, the analyses the data will undergo, and the formats in which pertinent information will be reported.

A project is a system and information keeps systems moving. To be successful you need to create an information system that gives the project manager and others the information they need to make informed, timely decisions that will keep project performance close to the plan.

Project managers can design monitoring and controlling systems specially targeted for schedule performance, work effort, and expenditures. Monitoring and managing scope creep and project change are two overarching control responsibilities. Most often, changes are identified by looking at performance and quality control data. Routine performance and quality control measurements should be evaluated on a regular basis throughout the implementation phase. Gathering reports on those measurements will help you determine where the problem is and recommend changes to fix it.

Monitoring

Objectives and key results is a goal-setting methodology to set challenging, ambitious goals with measurable results.

After data has been collected and analyzed, it needs to be reported in some form. Project reports provide senior management and project teams with an opportunity to see whether a project is on track and to determine whether they should do something different to ensure the projects meet their goals. The fundamental characteristics of a good reporting system include:

Timely, complete and accurate reports are:

- Not too costly
- Readily acceptable to team and sponsor
- Containing pertinent information only.
- Warns of pending problems (feedforward)
- Easy to understand – short and concise

In general project managers should avoid periodic reports except in those cases in which the flow of data is periodic. Reports issued routinely – every day, week, month, or quarter- generally do not get read. Instead, let a project's milestones, scope changes, problems, and the project teams' need for information dictate the timing of reports.

Types of Status Reports

- Performance/progress reports – These reports indicate the physical progress to date. The report might include information about procurement, delivery and usage.
- Status reports – These reports identify where we are today and use the information from the performance reports to calculate Schedule Variances (SV) and Cost Variances (CV).
- Projection Reports – The reports provide forward-looking projections and emphasize where the project will end up.
- Exception Reports – These reports identify exceptions, problems, or situations that exceed the threshold limits on such items as variances, cash flows, resources assigned etc.

After the deliverables have been physically constructed and accepted by the customer, a phase review is carried out to determine whether the project is complete and ready for closure.

Source: Chapter 17 of Project Management by Florence Daddey

16.

DASHBOARDS

What is a Dashboard?

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=132#oembed-1

Digital dashboards are a project management tool that can be used to get an overview of the health and performance of a project. They are simple and powerful data-driven software solutions that are used to visually ascertain the status and key performance indicators of a project, or a portfolio of projects. Digital dashboards can be constructed on top of low-cost spreadsheet programs or can be pre-defined templates and tools easily adapted to fit different projects. Dashboards provide an at-a-glance display of critical data pulled from different databases to provide warnings, action notices, and summaries of project conditions.

Digital dashboards can be set up to track the information flows inherent in projects that they monitor. Graphically, users can monitor high-level processes, and if necessary, drill down into low-level data. The success of digital dashboards depends mostly on the correct selection of project metrics (key performance indicators) to monitor. Digital dashboards can be tailored to provide key information and metrics required.

The key is to have all activities contributing to the overall project success be connected so that all project functions can be monitored and management is able to access the progress of each activity. This is a type of executive information system that allows managers to gauge how well the project organization is performing. It allows the organization to capture and report specific data points from each activity within the project so as to provide a “snapshot “of performance.

(Forman, J. B. & Discenza, 2006)

Tableau

Teachers and students at accredited academic institutions worldwide are eligible for free licenses to activate Tableau Desktop and Tableau Prep.

With Tableau, you can connect to virtually any data source. Work with any shape, size, and type of data, whether on-premises, in cloud applications, or flat files. Hybrid connectivity supports both live analysis and bringing data in-memory via encrypted extracts.

Tableau Prep provides a visual and direct way to combine, shape, and clean data, as well as automate data prep flows, helping you get to analysis and insights faster. Tableau Desktop offers unlimited data exploration through an intuitive interface, encouraging curiosity, creativity, and data-driven decision-making.

Courses and Guided Projects

Creating an Interactive KPI Management Dashboard with Tableau by Emily Kund, *Coursera*

Analyze Digital Marketing Spend in Tableau by Carmen Rojas, *Coursera*

Tableau Public for Project Management by Maria Zvezdkina, *Coursera*

Build Stock Returns Heatmap With Tableau by Bekhruzbek Ochilov, *Coursera*

Create a Big Number KPI Dashboard in Tableau Public by Carmen Rojas, *Coursera*

Create an Interactive Graph with Tableau Public by Emily Carlson, *Coursera*

Dundas BI

Dundas BI is an end-to-end business intelligence platform that simplifies the entire analytics process and empowers everyone to visualize and analyze data. Allows users to transform raw data into insights in the form of dashboards, reports, and visual data analytics.

The Dundas BI Academic Program is a free program created for educational uses. Allow students to learn critical data analytics skills in a modern BI platform. The program includes student projects, teaching materials and exercises, access to tailored analytics courses, certification in BI & Analytics, and more.

Power BI

Courses and Guided Projects

Getting Started with Power BI Desktop by Amit Yadav, *Coursera*

PowerBI Report Development Crash Course by Amit Navgire, *Coursera*

Build an HR Analytics Dashboard Using Power BI by Abhishek Jha, *Coursera*

Create a Sales Dashboard Using Power BI by Abhishek Jha, *Coursera*

Get Started Using Power BI (Microsoft Learning, Microsoft Power Platform)

Become a Power BI Data Analyst (Microsoft Learning, Microsoft Power Platform)

17.

SCOPE CREEP

Tools and Templates

Scoping Canvas by Board of Innovation

The Project Management Institute defines **scope creep** as the "adding of additional features or functions of a new product, requirements, or work that is not authorized (i.e. beyond the agreed-upon scope)" (Larson & Larson, 2009). Scope creep can be very harmful to a project by causing delays, additional costs, and hurt customer or team relationships.

In projects where the **scope** is poorly defined, the chance of **scope creep** is increased. The Digital Project Manager details several causes of scope creep, as well as strategies for managing it:

Causes of Scope Creep

1. The initial scope is ambiguous
2. Scope and requirements are not managed
3. Inconsistent process for collecting product requirements
4. Lack of sponsorship and stakeholder involvement
5. Project length not determined

Managing Scope Creep

1. Be proactive
2. Prioritize
3. Be transparent
4. Analyze impacts
5. Embrace it

18.

TRACKING DATA

Adele Hedrick; Mackenzie Collins; and Amanda McEachern Gaudet

Understanding Data

While collecting valuable data is important, being able to present it in a way that is understood and adds value is equally as important.

The video below will give you some ideas on how to not only share the data in a way that makes sense, but also in a way that adds value to your audience and gives them recommendations on what to do next.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=136#oembed-1

19.

RISK

Amanda McEachern Gaudet and Mackenzie Collins

What is Risk?

"A risk is any uncertain event or condition that might affect your project. Not all risks are negative. Some events (like finding an easier way to do an activity) or conditions (like lower prices for certain materials) can help your project. When this happens, we call it an opportunity; but it's still handled just like a risk." (Watts, 2014)

We identify risks so that we can plan for the potential impacts if they happen and decide in advance the type of action we would take if they come to fruition.

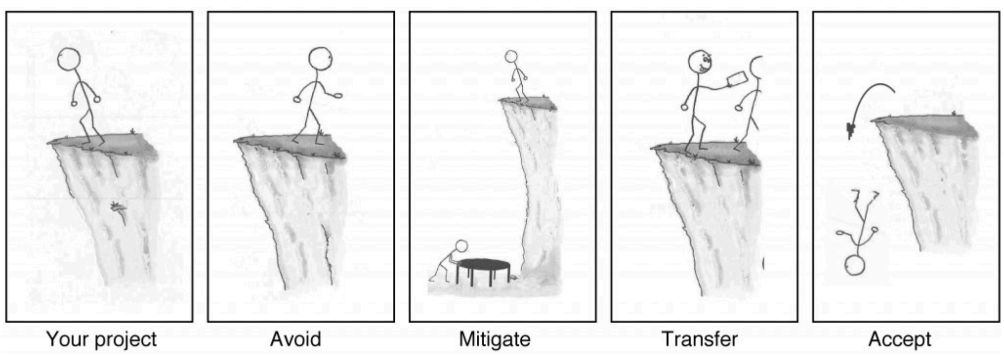

Figure 16.1 Risk Management Options (Watts, 2014)

With your Capstone, there are many different risks, both at a micro and macro level to the project. Identifying this upfront will help to increase the likelihood of success in your project.

Challenge your team to the exercise at the end of the video. Identify 5 potential risks you see as potentially impacting your project and how you would address them.

A common risk often relates to research, notable "primary" research. Many teams will attempt primary research and find they are not able to effectively collect enough data in the short period of time allotted, or collect the 'right' data to gain intended insights. One approach to mitigate or overcome this potential issue might be to change the primary research questions into secondary research. Find academic journals in the industry or field of your project and search out what results or information already exists. If you are uncertain about how to change these questions into searchable terms you can always seek out the guidance of your mentor, or library team.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=138#oembed-1

PART VI

FINAL DELIVERABLES

The next section will help you to define what will be included in your **deliverable**s on the way. It is important to remember you need to be proud of what you are handing to the client and always keep institutional reputation in mind. This is not only your reputation as an individual and a team but also that of your educational institution.

Make sure whatever you submit, the deliverable shows effort and thought and has considered the audience and the overarching purpose of the project and client needs. Make sure you are sense checking and potentially using tools such as Grammarly, to ensure it is polished. Also, if it does not affect the usability of the deliverable, consider sending it as a PDF document, rather than Word, Excel, etc.

Many teams will work on individual pieces and not leave the time to ensure you are submitting one cohesive document in the end. Give yourself time before the due date to send a draft, so that if revisions are needed you can complete them before grading is required.

20.

DELIVERABLE TEMPLATES

Amanda McEachern Gaudet and Mackenzie Collins

Employee On-Boarding or Training Materials

Courses and Guided Projects
Create Digital Teaching Printables With Canva Michelle Flores, Coursera Use Canva to design Digital Course Collateral by Stacey Shanklin-Langford, Coursera Create Interactive Learning Videos with Edpuzzle by Rachel Lindsay, Coursera Click Here for Our Onboarding Video Module

Strategic Hiring Plan

Tools and Templates
How to Build a Hiring Plan by Elizabeth Onishuk, Workable Sample Hiring Plan by CompassPoint

Recommendations for Hiring Process

Examples
Hiring Process FAQ by Nikoletta Bika, Workable

User interviews

Tools and Templates
Board of Innovation User Interview Guide

Customer Journey Map

Journey maps are often a part of the Design Think process. Journey maps consider different stages and what the users are thinking, feeling and experiencing. It tracks users' satisfaction (on the vertical axis) at specific periods (horizontal axis) before, during and after the service is provided. It can outline a specific user's experience or the experience created based on a persona. It can also be used to map a user's first-time experience or their reoccurring experiences based on the main service and issue.

In its most basic form, journey mapping starts by compiling a series of user actions into a timeline. Next, the timeline is fleshed out with user thoughts and emotions to create a narrative. This narrative is condensed and polished, ultimately leading to a visualization.

Most journey maps follow a similar format:

- **Service:** Determine the main service or path the customer is going to take, from awareness to exit.
- **User:** Identify the main user – this is usually based on the persona that has been created.
- **Timeline:** Establish a finite amount of time or specific phases of the service to structure the journey map around. At the top along the x-axis write down these phases, or segment the timeline.
- **Outline touchpoints:** The points where users interact with the service across all channels. Write out each touchpoint on a sticky and place touchpoints in chronological order of when they would occur, noting which actions come before others (make a path).
- **Understand emotions:** Understand the feeling and thoughts of the user at each touchpoint, based on previously collected qualitative user research. Place these quotes or feelings along with the journey map at the touchpoints that correspond to them. Put negative points towards the bottom and positive ones toward the top. This will show the changes in emotions as time progresses.
- **Layout:** The layout of each customer journey map is different and could be determined by a team's personal style or thought process. The important part is incorporating all the pieces, the touchpoints, emotions, quotes and timeline. This can then be refined or digitized into a layout that you find more desirable.

Source: Queen's Printer for Ontario, 2012–to22

See Design Thinking Module for More

Competitor Analysis Report

A competitor analysis report includes the following:

- Product summary
- Competitor strengths and weaknesses
- Competitor strategies and objectives
- Outlook: is the market growing? Flat? Splintering into niche segments?

Tools and Templates

Competitor Analysis Template, *VennGage*

Strategic Plan

Involves defining an organization's goals and making decisions to ensure the business can reach those goals. Can cover all aspects of this process, from helping team members visualize company goals to understanding how they fit into that process.

Elements of a Strategic Plan

- What is the plan for each area of the organization as it pertains to the overall goals?
- What are the goals for one year, two years?
- What are the strengths and weaknesses of the business?
- How does the organization intend to use its resources to advance its goals?
- What are the external and internal challenges faced?
- What are the development priorities for the next 3 to 5 years?

Courses and Guided Projects

Inbound – The Inbound Certification Course teaches you how to run a successful inbound business, from marketing to sales to services. (Kyle Jepson, *HubSpot*)

Business Model Canvas Analysis With Miro by Jasper Albert, *Coursera*

Wireframe

A redesign of the client's website, app, workflow etc..

Tools and Templates

Mural Sitemap Template

Courses and Guided Projects

Use Canva to Create Desktop and Mobile-friendly Web Pages by Chaitra Deshpande, *Coursera*

Build an E-Commerce Dashboard With Figma by Kellee Kimbro, *Coursera*

Create Wireframes with Balsamiq by Angelo Paolillo, *Coursera*

iPhone Application Flow with Wireframes in Miro by Tricia Bagley, *Coursera*

Design a User Interface Story Map in Miro by Tricia Bagley, *Coursera*

Create Interactive Prototypes with Webpage Linkage in Miro by Tricia Bagley, *Coursera*

Sales Plan

A typical sales plan includes the following sections:

- Target customers: Who your company aims to serve with its products and services.
- Revenue targets: How much revenue your team aims to bring in each period.
- Strategies and tactics: The specific actions your team will take to reach revenue targets.
- Pricing and promotions: Documentation of your offering's prices and any upcoming promotions that can convert customers.
- Deadlines and DRIs (Directly Responsible Individuals): Outline any important dates for deliverables and list who is accountable for their completion.
- Team structure: Who is on your team, and what their role is.
- Resources: The tools your team uses to reach revenue targets.

How to Create a Sales Prospecting Action Plan

- Market conditions: Pertinent information about your industry and the competitive landscape.

Sections:

1. Mission and Background
2. Target Market
3. Tools, Software, Resources
4. Positioning
5. Marketing Strategy
6. Prospecting Strategy
7. Action Plan
8. Goals
9. Budget

Courses and Guided Projects

Sales Management Training: Strategies for Developing Successful Modern Team – Learn how to define your target market, create a scalable sales process, and build training, coaching, hiring, and onboarding programs to help your sales team grow better. (HubSpot)

Sales Enablement: The Sales Enablement Certification will teach you how to develop a marketing-driven sales enablement strategy. (HubSpot)

Creating a Product-Market Fit with Value Proposition Canvas by Omodiaogbe Samuel, *Coursera*

Supply Chain Analysis Presentation

Tools and Templates

Value Chain Model Template
Porter's Value Chain Model
Editable Value Chain Analysis Templates

Application Security Audit Checklist

- Create model of application
- Gain Approval of application. Model
- Make sure the applications authentication system is up
- Restrict access to application directories and feels
- Implement session expiration timeout
- Forbid multiple concurrent sessions
- Provide least privilege to application users
- Implement CAPTCHA and email verification system
- Use encryption algorithms that meet data security requirements
- Avoid vulnerable API or function calls
- Run security audit on source codes
- Conduct web application vulnerability scan
- Conduct penetration test

Cybersecurity Analysis Proposal

1. Executive Summary
2. Background
3. Proposal
4. Options (Pros & Cons)
5. Risk Assessment
6. Market Research
7. Implementation
8. Requirements
9. Financial Requirements

Courses and Guided Projects

Wireshark for Basic Network Security Analysis by Menna ElSharkawy, Coursera

Cybersecurity For Organization Proposal PowerPoint Presentation

1. Table of Contents
2. Project Context and Objectives
3. Process flow
4. Timeline
5. Communication plan
6. Detail research and background knowledge to justify choices

IT Project Proposal Template

1. Introduction
2. Problem
3. Solution
a. Key Features
b. How it addresses pain point
4. Project description
a. Detail phases
b. Project schedule/timeline

Marketing Plan

Marketing plans can be brief, covering a single campaign, or they can be long-term, detailing your marketing efforts for an entire year. Most marketing plans should include goals, market position, timeline, and performance indicators.

- Product/Service – what is it?
- Price – compare to industry standards
- Promotion – what channels will you use to reach consumers?
- Place – where is it sold?
- Packaging – how does your product/service appear on the outside?
- Positioning – what ia the perception consumers have of your product/service?
- People – who in your organization will do each task related to the plan?

Steps:

1. Write an executive summary
2. Set metric-driven marketing goals
3. Outline user personas
4. Research competitors
5. Set accurate key metrics
6. Set tracking or reporting guidelines

Tools and Templates

Marketing Plan Templates & Examples (VennGage)
20 + Marketing Plan Templates (VennGage)
Social Media Plan Template (VennGage)
Board of Innovation Marketing Plan Checklist

Courses and Guided Projects

Inbound Marketing (HubSpot)

Business Marketing Brand Kit on Canva by Stacey Shanklin-Langford, *Coursera*

Building a Business Presence With Facebook Marketing by Kathleen Bergner, *Coursera*

Organic Marketing: Facebook Groups for Small Businesses by Lamia Labello, *Coursera*

Marketing Strategy

Successful strategies will give you the foundation for effective planning, so you are able to understand the industry and your organization's place in it.

Tools and Templates

Marketing Strategy Plan Example (VennGage)
Social Media Strategy Proposal Example (VennGage)
Mural Strategy Explorer Template

Market Research Reports

Market research generally involves gathering information about the needs, problems and wants of your customers. This research can help you come up with your customer personas and specific problems you want to solve with your product or service. Use charts and graphs to compare demographic information like customer age, gender, location, and occupations. Include the main conclusions you came from after analyzing your data

You can conduct market research in two ways:

1. Qualitative research (calls, focus groups)
2. Survey research

Tools and Templates

Template 1 (VennGage)
Template 2 (VennGage)
Template 3 (VennGage, single slide)
Template 4 (VennGage)
Survey Report Template (VennGage)

Digital Marketing Report

A digital marketing report should include any (or all) of the following data:

- An overview of the current digital marketing strategy
- The main marketing goals and whether they are being met
- An overview of conversion metrics, including the number of leads, paid vs. organic leads, and cost per conversion
- An overview of key traffic metrics, organized by channel
- An SEO overview, including any changes in rankings for target keywords
- An overview of PPC campaigns running, including clickthrough rate, ROI and cost per click
- An overview of social media channels, including engagement metrics and leads from specific channels

Tips:

- Provide an overview of the performance of all channels, or a particular channel
- Organize report by channel ("Organic Search", "Social Media", "PPC") or by specific campaigns/projects
- Use bar charts and tables to compare performance on different marketing channels
- Try to communicate information concisely and focus on only one topic per page or slide

Courses and Guided Projects

Digital Marketing: The Digital Marketing Certification Course will teach you how to become an effective digital marketer with an inbound-first mindset. (Jorie Munroe, HubSpot)

Digital Advertising: Today's digital advertisers require many skills to be successful: design, audience targeting, optimization, analysis, and more. In this certification course, you'll learn everything you need to create a customer-centric advertising strategy, including journey-based advertising, bidding and targeting strategies, paid search, social media advertising, programmatic, reporting, and more. (Corey Braccialini, *HubSpot*)

Getting Started in Google Analytics by Carma Baughman, *Coursera*

Custom Reports in Google Analytics by Carma Baughman, *Coursera*

Get Started with Facebook Business Manager by Dr. Karl Michel, *Coursera*

Small Business Marketing Using LinkedIn by Julia Arteno, *Coursera*

Measure a Marketing Strategy Using Facebook Insights by Kristin Walker, *Coursera*

Analyze Digital Marketing Spend in Tableau by Carmen Rojas, *Coursera*

Tools and Templates

Digital Marketing Report Template (VennGage)
Social Media Report Template (VennGage)

Content Calendar and Creation

A content calendar is a schedule used by content creators, including professionals, who work in marketing, web production, and publishing. It is a core workflow tool and the central hub for content teams. Whatever form a content calendar might take, they always list content assets and help you track progress and deliverables.

Tools and Templates

Content Calendar Template
5 Editorial Calendar Templates (AirTable)

Courses and Guided Projects

Social Media Marketing (HubSpot)

Content Marketing (HubSpot)

Use Canva to Create Social Media Marketing Designs (Stacey Shanklin-Langford, *Coursera*)

Create a Twitter Ad (Emmanuel Ibekwe, *Coursera)*

Create a Promotional Video using Canva (Abhishek Jha, Coursera)

How to Design Facebook/IG Stories Using Canva (Priya Jha, Coursera

Use Mailchimp to Build an E-Mail Marketing Campaign (Stacey Shanklin-Langford, *Coursera*)

Use Canva to Create Social Media Visuals for Business (Chaitra Deshpande, Coursera)

Using Video in Social Media Posts with Canva (Ashley Burton, Coursera)

Summative Assessment of Business Entity

Authentic Summative Assessment for Business Entities
(Michelle Vos, Elaine Watson, Allan Heaps, OER)

- Compare and contrast the non-tax operational features of various entity forms including formalities, rights and duties of owners, liabilities, effect of bankruptcy and dissolution.
- Develop a list of questions to ask the client to perform an analysis and determine the appropriate entity form for the business.
- Interview client to determine the specific needs concerning control, rights and duties, liabilities, taxes, formalities, effect of bankruptcy, and dissolution.
- Analyse the client's answers to the questions concerning specific needs related to control, rights and duties, liabilities, taxes, formalities, effect of bankruptcy, and dissolution.
- Recommend an appropriate business form based on the business owner's specific needs. Justify choices in making a recommendation.

Consumer Trends Reports

Tools and Templates
Consumer Activity Report Template

Document findings and build strategies based on customer preferences and attitudes towards a brand.

1. Consumer Insights: the meaning behind the consumer's behavior. Explain people's motivations, needs, pains, etc.
a. Preferences
b. Habits
c. Behaviors
2. Customer Segmentation: divide target user into groups with similar characteristics.
3. Consumer Trends and Projections

Go-To-Market Strategy

Courses and Guided Projects
Create a Balanced Scorecard to Align Priorities in Miro by Tricia Bagley, Coursera

Tools and Templates
Mural Strategy Blueprint Template Board of Innovation – Go To Market Roadmap

Market Sizing Revenue Potential Estimate

Tools and Templates
Market Sizing Template (Board of Innovation)

General Business Report

1. Title Page
2. Table of Contents
3. Executive Summary
a. Overview of Issues, Analysis, and Solution(s)
4. Introduction
a. Purpose of Report
b. Problems to Be Covered
c. Methods Used
5. Analysis of Issues
6. Recommendations
7. Conclusion
8. Appendixes
9. References

Patient Behaviour Journey Map

1. Scope the depth of the journey that is important for your strategic objective
2. Map the hypothetical patient journey
3. Identify unknowns and areas of uncertainty within journey
4. Conduct exploratory ethnographic research with target patients and stakeholders to dig deeper into decisions and influencers
5. Refine map based on learnings
6. Prioritize key decisions and articulate the underlying influencers, social determinants, and biases of each

Tools and Templates

Patient Behavior Journey Map Template

Stock and Trading Report

Courses and Guided Projects

Building a Candlestick Chart with Tableau by Bekhruzbek Ochilov, *Coursera*
Build Stock Returns Heatmap With Tableau by Bekhruzbek Ochilov, *Coursera*
Build a real-time Stock Market Dashboard Using Power BI by Abhishek Jha, *Coursera*
Compare Stock Returns with Google Sheets by Bekhruzbek Ochilov, *Coursera*
Measuring Stock Liquidity by Bekhruzbek Ochilov, *Coursera*
Tesla Stock Price Prediction Using Facebook Prophet by Abhishek Jha, *Coursera*
Construct Stock Market Indices by Bekhruzbek Ochilov, *Coursera*

SWOT Analysis

Analyze strengths, weaknesses, opportunities, and threats.

Tools and Templates
SWOT Analysis Template (VennGage) Mural SWOT Template

Growth Engine (AARRR)

To map and identify the crucial actions and tactics to implement to make sure a user becomes a paying customer. Use the following tool to build a growth funnel and identify where you should focus your energy.

Tools and Templates
Growth Engine Template

Investment Analysis

Tools and Templates

Board of Innovation Investment Readiness Template
Mural ROI Calculator

Courses and Guided Projects

Investment Risk Management by Bekhruzbek Ochilov, *Coursera*

Budgeting and Tracking

Courses and Guided Projects

Create a Budget with Google Sheets by Jamie Schroeder, Coursera

Proposals

The general purpose of a proposal is to persuade readers to do something, such as purchase goods or services, fund a project, or implement a program.

Proposals often demonstrate that a problem exists that needs attention and address a very specific audience with the authority to move your suggestions forward.

Proposals may contain other elements—technical background, recommendations, results of surveys, information about feasibility, and so on. But what makes a proposal a proposal is that it asks the audience to approve, fund, or grant permission to do the proposed project.

To write a successful proposal, put yourself in the place of your audience—the recipient of the proposal—and think about what sorts of information that person would need to feel confident having you complete the project.

Tips

- Think of three questions you know the decision-maker will have, and have your answers well-prepped, and/or include in the written report.
- Use the AIDA Model (Attention-Interest-Desire-Action)
- Gain attention, build interest, create desire, and motivate action
- Make sure to complete the following:
  - Demonstrate your knowledge
  - Provide concrete information and examples
  - Research the competition
  - Prove that your proposal is workable
  - Package your proposal attractively

Sections

- Introduction
  - Indicate content is a proposal for a specific solution
  - Write a motivating statement to encourage the recipient to read on and consider approving
  - Give an overview of contents
- Background on problem, opportunity, or situation: discuss what has brought about the need for the project
- Benefits and feasibility of the proposed project/solution/strategy/service, some proposals discuss the likelihood of the project's success
- Description of the proposed work (results): At this early stage, you might not know all that it will take to complete your project, but you should at least have an idea of some of the steps required.
- Method, procedure, theory: explain how you will go about completing the proposed work. Show the audience you have a sound, thoughtful approach to the project and demonstrate that you have the knowledge of the field to complete the project.
- Schedule: project completion date, key milestones, a timeline of progress reports, etc.
- Costs, resources required: internal and external resources
- Conclusions: Bring readers back to a focus on the positive aspects of the project. In the final section, you can urge where to go to work out the details of the project, remind them of the benefits of doing the project, and maybe make one last argument in favour.

(Gross, et al., 2019, pp. 35-44)

Example of an External Solicited Proposal
Internal Unsolicited Proposal Report (Alyse Pflanz, 2019, OER)

Evaluation Checklist

Tools and Templates

Board of Innovation Evaluation Criteria Template

Customer Barriers & Boosters

Map and segment interview notes validating your service/product prototype with your potential customers.

Tools and Templates

Customer Barriers and Boosters Template (Board of Innovation)

21.

RESEARCH DELIVERABLES

Mackenzie Collins and Amanda McEachern Gaudet

The research **deliverable** should have a minimum framework used as guidelines for students (and clients) to understand expectations and outcomes.

The amount of time spent on each deliverable can fluctuate as needed; however it is important to remember the total length of time necessary to complete the project. If we were to break down one semester into 3 equal parts, one for each deliverable, **each individual deliverable should take no longer than 4 weeks**.

However, with this being the first deliverable, it is advised to give attention to the chaotic nature of the semester in the first week as students are introduced to their courses initially. Ideally, the students should spend a minimum of 2 weeks on deliverable #1.

Students should be asking the client:

- How do they want the research presented to them?
- What level of detail is expected? How in-depth should the research be?
- How much information do they want?
- Where do they want this research to come from?
    - Sources, Viewpoints, Organizations, Types of Researchers, etc.
- How do they want the data stored/sent to them?
- How do they want the data stored/sent to them?
- What should be used to complete this?
    - What is required/will be given from the client?
    - Are labs and/or equipment necessary?
    - If clients require supplementary materials alongside any presentation, such as additional brochures, pamphlets, infographics, or other.

Research papers should be a **minimum** of 5 pages, properly cited using APA Citation.

APA Citation Guide (Purdue University)

Presentations should be 5-10 minutes **minimum**, with or without slides depending on the client's preference. (See professional presentations chapter).

At least 10 secondary sources of research should be cited in the results, these sources should be those most relevant to answering the research question – not the first 10 sources that appear in the search.

If primary research is being done, a sample size of **at least 10%** should be taken. In the case of participant interviews, this number may be lowered to accommodate for time.

Types of Research

- A/B Testing
- User Testing
- Interviews
- Surveys

Sample Sizes in Primary Research

Qualitative Research

The key in qualitative research is not the number of participants, but rather your justification for the sample size. A minimum of 12 cases in a sample is the recommendation when conducting qualitative research (Boddy, 2016).

https://www.qualtrics.com/blog/calculating-sample-size/

Quantitative Research

Once you determine a few bases, you can calculate your sample size through a formula (or online tool).

- **Population Size** – the number of people in the entire group you are researching (i.e., all the employees at the company, all customers)
- **Confidence Level** – the statistical probability that the value of a parameter falls within a specified range of values. The most used confidence level is 95%. The higher the confidence level, the higher the probability your results will truly reflect the population.
- **The margin of Error** – the maximum acceptable difference in results between the population and the

sample. The smaller the margin of error, the more predictive your results are of the general trend of the population. The recommended margin of error to be used is between 5-10%.

Research Paper

Length

Understand your target audience when deciding length. A highly technical audience will appreciate a highly detailed paper that includes visuals, charts, and more. This could be 30-50 pages. A non-technical audience will appreciate a shorter paper that clearly synthesizes all points in an easy-to-understand way. This could be 10-15 pages.

Background Work

- Think about different forms of evidence that can aid your research
- Gather evidence from a variety of sources
- Develop a bibliography
- Write a thesis for your research
- Critically analyze and write about key pieces of evidence
- Consider the possible reasons one may disagree or question the premise of your thesis
- Categorize and evaluate evidence

The Components of a Research Paper

- **The Formal Outline**: Formal outlines are a sort of table of contents for your essay: they give the reader a summary of the main points and sub-points of what they are about to read.
- **The Introduction**: Get the reader's attention and briefly explain what the essay will encompass.
- **Background Information**: Explain, contextualize, and orient your readers.
- **Evidence**: Generally speaking, you need to have a piece of evidence in the form of a direct quote or paraphrase every time you make a claim that you cannot assume your audience "just knows." Your audience wants to know your *interpretation* of these quotes and paraphrases as you guide them through your research. To do this, you need to explain the significance of your evidence throughout your essay.
- **Possible Arguments and Rebuttals**: Anticipate the ways in which a reader might disagree with your point, and address them. Demonstrate your knowledge of the different sides of the issue by acknowledging and answering them.

- **Conclusion**: Make a connection in the conclusion of your essay with the introduction, and restate your thesis, Note that you don't necessarily have to restate your thesis in the same words you used in your introduction.
- **Works Cited / References** (ensure you understand the difference between 'in-text citations' and the end list of sources)

Sources & Examples

Courses and Guided Projects

Research Writing (2018) by Shaelynn Long-Kish, OER
The Argumentative Research Project by Sara Layton, OER

Tools and Templates

citethisforme.com: Get the citation for any website you're visiting online
easybib.com: Manage citations for a project
flightradar24.com: Live air traffic map. Track, search and view info on capacity, cargo, route and more for any aircraft in the sky.
importyeti.com: Find any company's suppliers worldwide, and view shipment dates, maps and more
scholar.google.com: Find academic journals, books, and articles related to any topic

22.

PRESENTATIONS

Liz West; Robert J. Weese; Amanda McEachern Gaudet; and Mackenzie Collins

Develop a High Impact Presentation

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=148#oembed-1

By: Robert J. Weese, B2B Sales Connections

A study conducted by IBM found that the employees who were the best speakers and presenters also got the most promotions. Almost anyone can deliver a presentation. Very few people can deliver a high-impact presentation that moves the audience to act.

Multiple studies have concluded that "presentation and speaking" skills are one of the best predictors of a person's success. It impacts your ability to get hired and promoted and yet schools and businesses usually neglect this topic in their career development programs.

If you had the opportunity to learn a skill that could mean a better career, higher income and more opportunities would you spend time developing that skill? I'm pretty sure your answer is YES.

Join a Toastmasters Club or find a course on public speaking and get started on your own path to success.

In the below video workshop you will learn not only how to structure your presentations, but also how to become a high-impact presenter.

How To Develop And Deliver A HIGH IMPACT Presentation (Handout)

4 Key Components

1. **Preparation**

   The introduction is where you set the hook to capture their attention. We then follow the introduction with 2-3 main points or ideas that are supported with evidence and stories. The goal is to provide proof that your hypothesis is correct.

   In the body of your presentation, one of the simplest methods of developing your content is to use a storyline framework. This is where you address the pain, problems or challenges that are impacting your audience. Make sure you focus on 2 or 3 key ideas, so you don't start building a shopping list of topics, resulting in too much content.

   Always provide your audience with a vision. Let them get a glimpse of what's on the other side of the problem. Incorporate your hard evidence, data and stories to prove your idea will work.

   The conclusion is where it's important to paint a picture for the audience. If you don't give them something concrete to focus on, they will develop their own ideas and it may not be what you are hoping for. Once you have shared your ideas, provided the evidence, and told a relevant supporting story(s), you need to review the expected "outcomes" and how implementing your solution or idea will be a win for the audience or your team.

2. **Organization**

   - Start with Audience Key Outcomes
   - Introduction, Set the Hook
   - Point #1
     - Topic
     - Proof
   - Point #2
     - Topic
     - Proof
   - Point #3
     - Topic Proof
   - Conclusion -> Call to Action

3. Writing

It is often best to start developing your presentation by writing your conclusion and then building the body of evidence towards the end.

Once you have your presentation framework built you can then write your introduction and look for a strong method of capturing the interest and attention of your audience.

Most professional presenters will tell you they spend 1 hour preparing for every 1 minute of delivery. That's how they make it look easy.

When you're preparing for your next presentation and want to figure out how much preparation time you need, use the 10X FORMULA. It states for every minute you are going to be presenting you need to spend at least 10 times as much time preparing

That doesn't include creating the content or developing the visuals, that's just preparing to speak. It may seem like a lot of work but it's the only way to go from good to great

4. Presenting

Getting your ideas across means you mustn't only focus on what you say, how you say it can be just as important. Warton Business School Research showed that when people were trying to persuade others, they modulated their voice by changing the volume and changing the variation in their volume in a way that made them sound more confident. And because they seemed more confident in what they were saying, that confidence led to greater persuasion.

People with rough, weak, or strained voices tend to be labelled as negative, weak or tense. While people with strong voices are described as successful, sociable and smart. In order to reduce your fear and anxiety first visualize yourself giving your speech. Imagine that your voice is loud and clear and confident. Visualize the audience clapping when you are finished, it will boost your confidence.

It's important to understand that people want you to succeed. The audience wants you to be interesting, informative and entertaining. They're rooting for you.

Using Gestures

Descriptive Gestures – indicate position, location, or anything tactical. For instance, use your hands to specify several objects. You could point to a location. Gestures can also be used to show the shape or size of an object.

Emphatic Gestures – are used to underscore strong emotions such as placing your hand on your heart, bowing and shaking your head, wiping an imaginary tear from your eye. These gestures are very effective when they are part of the stories you're telling.

Prompting Gestures – designed to get a response from the audience. You could ask for a show of hands, or signal for everyone to all stand-up or sit down. Prompting gestures are all about action and engagement

Types of Presentations

- Inform
- Persuade
    - Logical decision-makers are looking for evidence to support your thesis.
    - Emotional decision-makers need stories and antidotes before they will support your ideas.
- Entertain

Scripting

You don't need to write a script for your presentation. Instead, many professional speakers develop a "keyword" outline. This means you select important keywords and phrases that will be used in your notes to keep you on track.

When presenting you can quickly glance at the keyword outline, and it will show you the order of the main points you are addressing and what stories or evidence you need to present next keep the presentation flowing smoothly.

Presenter's Blueprint

by Liz West, BeWellSpoken

Tell them what you are going to tell them. Clearly state your reason for this presentation, your statement of purposes. "Today I'm going to talk to you about *what* and I will show you *how* because *why*"

Tell them. Did you provide 1-3 important ideas? Did you use simple and easy-to-read imagery to add clarity?

Tell them what you told them. Repeat the intention of your presentation/talk. End the story/conversation.

Presentation Checklist

- Who is your audience?
- Did you make it easy for them?
- Did you tell a story?
- Where will you leave space/silence?
- Are you speaking conversationally?

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=148#oembed-2

Tools and Templates

animatron.com: Create, edit, and repurpose marketing videos or create video animations
panzoid.com: Easily create an intro or outro for videos
slidescarnival.com: Thousands of free PowerPoint templates and themes for Google Slides
synthesia.io: Create professional AI videos from text in 50+ languages
unscreen.com: Remove backgrounds in videos or gifs
lumen5.com: Turn written content into video
Canva.com

Courses and Guided Projects

Getting Started with Microsoft PowerPoint

Designing and Formatting a Presentation in PowerPoint

Using Animations & Transitions in PowerPoint 365

Creating Engaging Presentations with Mentimeter

Creating a Marketing Presentation with Prezi

Create Informative Presentations with Google Slides

Create an Infographic in Canva

Video Modules

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=148#oembed-3

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=148#oembed-4

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=148#oembed-5

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=148#oembed-6

23.

STUDENT REFLECTIONS

Mackenzie Collins and Amanda McEachern Gaudet

When Everything is Completed!

Think about how everything went and what you can do differently in the future. Many of us set high expectations of ourselves on our first industry projects and forget about the limitations of time during a semester. How do you plan better on your future work and employment opportunities? When you finish your Capstone reflect on the experience. Self-reflection can be difficult but will be invaluable to your personal and career growth. Reflection is a critical process – it is not just a story of 'what happened', but instead it is a task in thinking about the effects and impact your journey and observations will have on your future self, professionally and personally. Reflection should be honest and balanced.

Part I: Personal Goal Setting

Usually done during the first week of the semester. This will help to prepare and get students into the right mindset to take on a project successfully. It will also be useful to refer back to these goals when completing an end of semester Reflection Piece.

1. Prioritize: What makes you happy? What do you value most?
2. Plan: Decide your (attainable) goal, what will it look like when you've achieved it? What will the benefits be?
3. Get Advice: How can you gain support from others? Where may you receive inspiration?
4. Don't Give Up: What daily challenges might you see instead as an opportunity for growth?
5. Celebrate: How have your past achievements made you feel? How will you feel when you achieve this goal?

Part II: Reflection Piece

To be completed during the final week of the semester. Students must answer at least one question from each of the following categories:

Cognitive Reflection

- How has your experiential activity related to the readings, discussions, and lectures in your courses? Provide specific examples of related course concepts and describe the context in which the concepts related to your experiential learning activity.
- Did your understanding of course material/concepts you have studied improve as a result of your participation in this experiential activity? Provide examples.
- What complexities do you now see in the concept that you were not aware of before?
- Did your understanding of the experiential activity improve as a result of the course material/concepts you have studied? Provide examples.
- In what specific ways are concepts of course material you have studied and the experience the same and/or different?
- Upon reviewing the experience, identify and describe an example of a different approach (e.g., decision or action) you could have taken. Envisage the impact of such a change.
- What are the most important learning moments you take with you from this experience?
- How can you educate others or raise awareness about this experiential activity?
- What new skills have you learned since beginning your experiential activity?

Process Reflection

- What expectations did you have about your experiential activity? Do you have a different picture of your experience than you had before you began it?
- What would you like to change about your experience?
- What were the benefits from participating in this experiential learning activity? Did anything surprise you? If so, what?
- What did you do that seemed to be effective? What were your personal contributions to the experiential activity?
- What did you do that seemed to be ineffective?
- What were the most difficult parts of the experiential activity? Why?
- What were the most satisfying parts of the experiential activity? Why?
- What have you done in this experiential activity to make a difference? What impact do you think you have had?
- What type(s) of a role did you endeavor to fulfill during the experiential activity? Examples include leader, collaborator, challenger, creator, team-builder, innovator, etc. Were you effective within this/these roles?
- Identify and describe your approach as a team member. Was it effective? Why?
- What do you think was your most valued contribution to the experiential activity?

- How do you see you role with this experiential activity? How does that compare with how others may see your role?
- What personal characteristics made this experiential activity successful?
- Identify and describe an awareness about a personal characteristic that has been enhanced by reflection on your experiential learning activity.
- How does the experiential activity relate to your long-term goals?
- How have you been challenged?

Affective Reflection

- Would you do this again? Why?
- Describe what you have learned about yourself as a result of your experiential activity.

Questions for Thought Reference

(2009). Critical Reflection – an integral component to experiential learning. CRITICAL REFLECTION – an integral component to experiential learning. The Experiential Learning Office – Ryerson University. Retrieved from https://www.mcgill.ca/eln/files/eln/doc_ryerson_criticalreflection.pdf

24.

PEER EVALUATIONS

Peer evaluations are defined as:

> "… an arrangement for learners to consider and specify the level, value or quality of a product or performance of other equal-status learners" (Topping, 2009).

Peer evaluations involve: instructors developing a set of success criteria; presenting these criteria to students and discussing them; allowing the students to mark or comment on each other's work based on the criteria; giving feedback to their peers either orally or in writing. These are not easy tasks and students need to learn how to develop the necessary skills to become reliable assessors and partners in the assessment process, (Chetcuti & Cutajar, 2014).

Importance of Peer Evaluations

Several research studies suggest that peer assessment can improve the quality of learning (Black et al., 2005; Topping, 2009); encourage deep, rather than surface learning (Harrison & Harlen, 2006); provide valuable insight into student understanding so that teachers can learn more about their students and lead to greater autonomy of the learners (Orsmond, 2004).

Through receiving and giving feedback students learn from each other, and also learn the skills of self-evaluation, observation and communication. Students become 'informed insiders rather than passive victims of the assessment process' (Chetcuti & Cutajar, 2014).

PART VII
PROJECT FRAMEWORKS

Each project should be easily broken down into a minimum of three deliverables. The completion of these deliverables should result in a satisfactory result towards accomplishing the overall project goal.

There are a wide variety of projects across the programs, but many have the same core frameworks.

25.

CROSS-FUNCTIONAL PROJECTS

Due to the nature of the course, as a course available for all majors within the Faculty of Business and Information Technology, it frequently occurs that projects will have students from a variety of backgrounds. In many instances, it may be an asset to have students from different faculties to have a diverse range of knowledge and skill working towards the objective.

Below are a number of framework examples with projects that are suitable for students from a combination of majors.

Technology Management & Human Resources

Internal HR Software Redesign

The client desires to upgrade their processes for employee management, specifically their performance evaluation tool. The goal is for this tool to be interactive, user-friendly, and relevant to our staff to assist with adoption.

Courses and Guided Projects
Create an Employee Management System (A. Saey, Coursera)

1. Research the needs and challenges of the team, and what is needed of the tool.
2. Research and identify performance management options available.
3. Create a preliminary re-design of this tool to ensure targets, goals, and performance issues are being documented and called upon. Create a rollout or pilot plan that identifies the team's needs to consider in adopting the new tool.

Technology Management (IT & Commerce)

Prospective CRM Evaluative Study

Tools and Templates
Product Requirements Document Template

The client's sales team has grown rapidly, and the sales pipeline has become difficult to manage through spreadsheets and Google documents. They would like the team to provide them with a comparison report of the top CRMs available and make a recommendation, based on their specific needs.

1. Complete Internal Research: interview sales team, understand pain points and priorities, review company values and goals.
2. Complete External Research: consider core features, pricing, features, constraints, usability, implementation, training, learning curve, existing system integration, security features, customizability, etc. for several CRMs.
3. Complete a recommendation report which includes the selected CRM and reasoning for choice, as well as recommendations for implementation, timeline, and financial breakdown.

Finance & Commerce

Pricing Model Development

The client wants to develop and test pricing model options to recommend the best solution for their needs.

1. Research: Evaluate the current pricing structure (if there is one), research organizational costs, target customer, revenue targets, business goals. Compare to competitors pricing structures as well as industry best practices, review the competitive landscape of the market.
2. Organize focus groups, surveys, customer interviews, or targeted online ads to A/B test potential pricing models and receive feedback.
3. Present findings as well as recommendations in a written report including an Executive Summary that illustrates your research findings and recommendations on our pricing model, as well as a visual presentation of your research findings and recommendations.

Courses and Guided Projects

Profit Analysis Using Economic Value Added (B. Ochilov, Coursera)

Predict Future Product Prices Using Facebook Prophet (R. Ahmed, Cousera)

Sales Forecasting Analysis

The client wants the group to analyze organizational assets such as personnel, strategic records, business plan, and pricing/promotional information to construct a sales forecast on their behalf.

Courses and Guided Projects

Udacity Course: Time Series Forecasting

(T. Moses)

1. Research
   1. Review sales run date, track historical trends
   2. Monitor competitor activities
2. Compare and Predict
   1. Compare TY and LY forecasting
   2. Include projectable market-shifting events
   3. Incorporate current business plan
3. Report
   1. 10 Page written report including details of the forecasting analysis and insights. This should include:
      1. Sales forecast for the next 12 months with monthly projects
      2. Annual sales forecast for the following two years

Proposal for Reducing Operational Costs

The client wishes to specifically know how a shift to a virtual office may impact the finances of the organization.

1. Investigate current client costs.

2. Investigate the costs that would be incurred during the shift, as well as costs if the office were to run virtually.
3. Submit a comparison highlighting the more cost-effective option, showing a 2-5-10 year project of re-occurring costs.

26.

RUNNING PROJECTS OVER MULTIPLE TERMS

There are some instances in which a client has a proposed project which is simply to large to expect one team to complete within one semester alone. In these cases, the client may have the option to structure the overall project in such a way that in can be split into identifiable sections which can then be run as if micro-projects themselves. By doing so, it is possible to have one team of students complete one section of the project and then hand it off to a subsequent (semester's) team of students to finish.

If this is the case – there are a number of guidelines to follow.

First Team:

- Deliverable #3 must include preparation for hand-off as well as recommended next steps
    - Could include training manual, instructions, passwords, transfer of files and documents, meeting, etc.

Second Team:

- First deliverable must include review of all hand-off materials
- Final deliverable summary should include work of first team as background information

27.

HUMAN RESOURCES AND ORGANIZATIONAL BEHAVIOUR

Travis Dutka; Mackenzie Collins; and Amanda McEachern Gaudet

Students from this program are expected to have reasonable knowledge in the following areas: compensation and benefits, developing management skills, health and safety, industrial and labour relations, management of change, negotiations, recruitment, training, and development.

The basic framework for Human Resources projects includes three to four stages, with the final deliverable being the most varied element. The main categories of projects we see under Human Resources involve the development of a policy, system, process or other as well as the research and implementation of standard practices.

Diversity, Inclusion, Antiracism Framework

The client wishes to understand and incorporate the current norms for Workplace Inclusion, Diversity, and Equality policies for companies of their size in their industry.

- Research into the current standard WIDE policies.
    - Consisting of properly cited sources, in a rough document.
- Summary of research results presented alongside recommendations based on research
    - Presentation format, written report, or other
- Draft a WIDE policy document for the client

Strategic Hiring Plan

The client wishes to develop a system to effectively build their team to sustain business growth.

- Study and evaluate current recruitment and selection procedures used by the client to determine their effectiveness and opportunities for improvement
    - Can include interviews with hiring managers, reports of employee productivity, and other primary research that the client organization is willing to offer.
- Research and consider known best practices, tests and assessments, tools, and systems that may meet the organizational needs of client.
    - Consists of secondary research, which must be properly cited.
- Develop a revised hiring methodology and process for the client organization to adopt.

Courses and Guided Projects

Hiring and Retaining Top Talent

by Nikki Winston, *Coursera*

Building a Hiring Plan by Analyzing Past Data in Sheets

by Kathleen Bergner, *Coursera*

Virtual Onboarding Plan

The client wishes to develop a new hire virtual onboarding which will prepare their new employees for long-term success. The onboarding process should integrate the new hires into the client's company culture, accelerate the learning curve, and increase retention.

- Conduct research on effective virtual onboarding methodologies and systems, virtual onboarding practices of competitors, as well as key components necessary to a successful onboarding system.
- Based on research, develop a standardized onboarding plan that achieves the goals of the client, including references.
- Develop a strategic plan for implementing an onboarding program

Video Module by Travis Dutka

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=164#oembed-1

Employee Development Plan

Courses and Guided Projects
Training & Development with Eduflow by Abby Saey, *Coursera* Create a Career Development Plan by Angelo Paolillo, *Coursera*

The client wishes to know how to enhance the performance of both new and experienced employees.

- Analyze current practices making note of gaps in training or development, opportunities for improvement, key themes and patterns specifically in relation to:
    - Succession planning
    - New team member on-boarding
    - Job-related skill training
    - Organizational development and performance
    - Employee personal development goals
- Research methodologies that may be of benefit, exploring practical solutions in the form of tools, best practices, or training programs.
- Present results in a recommendation report, with care to answer not only what should be done or included for improvement, but how to develop or implement.

Employee Training Course Creation

Courses and Guided Projects

The client wishes to research and develop full courses and/or modules to aid their clients career growth, career selection, career transition, and more.

- Scope out, conceptualize and ideate the execution of training plans for courses.

- Conduct primary research with current clients to question them as to the viability of new courses for our target audiences.
- Summarize available research and information provided by the client to create content for the courses, such as PowerPoints, activity workbooks, manuals, PDFs, and more.

Create Digital Teaching Printables With Canva by Michelle Flores, *Coursera*

Use Canva to Design Digital Course Collateral by Stacey Shanklin-Langford, *Coursera*

Create Interactive Learning Videos with Edpuzzle by Rachel Lindsay, *Coursera*

Volunteer Recruitment

The client, a non-profit organization, wishes to find ways to optimize the process of finding individuals willing to invest their time in the client's mission.

- Document and assess the current state of volunteer recruitment process and tools
- Create visualizations, diagrams, etc. to help identify the strengths and pain points of the current process
- Make recommendations for improvements and efficiencies

Incentives Program for Employee Performance Enhancement

The client wishes to understand the relationship between various incentives and employee performance to better utilize them.

- Assemble and analyze literature and other resources which discuss the average success/fail rate, and overall impact of different forms of incentives in a company similar in structure to the client's
- Investigate different forms of incentives, their costs, effectiveness, etc.
- Collate the information into a recommendation report with pros and cons detailed for and well-formed reasoning to support program recommendations.

Courses and Guided Projects

Program Quality Planning with ClickUp

by Jasper Albert, *Coursera*

Monetary Incentives and Employee Performance

Health and Wellness Program Implementation

The client wishes to understand what types of health and wellness initiatives would be of value to their employees, and how to justify the cost. The primary goal of implementing a Health and Wellness Program is to elevate the overall wellbeing of our employees and to make our organization an employer of choice. The client hopes to gain an understanding of what components should be included and on implementation strategies.

- Conduct Research: Interview or survey employees, research current trends in corporate health and wellness
- Develop a realistic Health and Wellness program based on budget restrictions and needs of client and implement ideas from research.
- Provide and present a program as well as ROI metrics to justify the implementation of a corporate Health and Wellness Program

Management Analysis for Small Businesses

Based on a management issue currently faced, students will research and analyze your organization's goals and existing structure to provide with strategic recommendations.

Examples:

- Restructuring your organization based on an organizational challenge.
- Identifying areas of your organization to focus hiring efforts.
- Suggesting incentives packages improve employee retention and morale.
- Developing strategies to improve employee productivity and satisfaction.
- Developing recommendations for your organization to meet a goal or solve a challenge.

Final Deliverable:

- A written report on research, findings, and recommendations.
- A presentation reviewing student findings and recommendations.

28.

NETWORK SECURITY AND IT

Amanda McEachern Gaudet and Mackenzie Collins

Students from this program are expected to have experience or knowledge in the following areas: network engineering, databases, cryptography, malware analysis, operating systems security, and digital transmission.

Open-Source Software Management

Harnessing high-quality open-source software can reduce product production time and increase the viability of otherwise unachievable projects. Determine which new open source tools are best suited to organization's needs or in improving your organization's existing open-source tools.

The final project deliverable: A report of current trends in open source software, which technologies are relevant for your organization, and how you could implement them to your advantage.

Software Lifecycle Analysis

A team of students will study your organization's software development processes and complete a proposal on how to optimize your systems and procedures. Alternatively, students can set up a new ideal workflow for a start-up organization. Project could include:

- Improving your existing software development lifecycle methodologies.
- Determining if you should use a waterfall approach or an agile approach.
- Researching tools for continuous delivery or integration.

The final project deliverables will include:

- A report outlining your recommended software development lifecycle.
- A final presentation explaining processes and key findings of the project.

Real-Time System Development

Courses and Guided Projects

Build a Product Roadmap with Aha!

by Emil Tabakov, Coursera

Create a Lead Generation Messenger Chatbot using Chatfuel

by Abhishek Jha, Coursera

Design and implement a fully functional real-time system that alleviates a challenge or provides a competitive advantage for organization. Work will include design documentation, an implementation roadmap, and building a fully functioning real-time system.

Project examples include, but are not limited to:

- A chat/messenger application
- Building a state container system
- Implementing a socket event management system
- Adding “presence” to an existing framework such as a chat application

The final project deliverables will include:

- The original documentation for the architectural design of the system
- The product roadmap used to create the system and plan implementation
- The source code for the new real-time system
- A final presentation

Database and Architecture Optimization

The client wants to implement improvements and solutions to their system.

- Review existing structure
- Research options, and needs of client
- Suggest improvements to data storage and querying

Examples:

Optimizing and Enhancing Performance of Database Engine Using Data Clustering Technique

M. H. Rahman, F. B. Al Abid, M. N. Zaman and M. N. Akhtar, “Optimizing and enhancing

performance of database engine using data clustering technique," 2015 International Conference on Advances in Electrical Engineering (ICAEE), 2015, pp. 198-201, doi: 10.1109/ICAEE.2015.7506830.

Courses and Guided Projects

Database Design with SQL Server Management Studio by Ali Amr Souidan, *Coursera*

Database Creation and Modeling Using MYSQL Workbench by Omnya Khaled, *Coursera*

Build a Company's Database Using MySQL and SQL by Abdelrahman Khaled, *Coursera*

Cybersecurity Upgrade Proposal

Plan, implement and upgrade security measures for the protection of the organization's data, systems, and networks. Look for industry-best security measures, or recommend custom-built (with feature descriptions) for company needs. The client wishes to ensure that the organization's data and infrastructure are protected by enabling the appropriate security controls. Present results and future recommendations for future implementation.

Example of Final Proposal Features:

- Executive Summary
- Background
- Proposal
  - Option 1
  - Option 2
  - Option 3, etc.
- Risk Assessment

- Market Research
- Resources, Roles and Responsibilities
- Next Steps
- Hardware and Software Requirements
- Financial Plans
- Training and Recommendations

IT Security Risk Assessment

- List all IT assets and owners – identify potential security threats to the assets
- Look for vulnerabilities in the data systems, assess the risk of asset exploitation by the threats, determine the impact of the security risks
- Evaluate existing controls and propose new measures. Review results and complete security proposal

Examples:
Security Risk Assessment Guidelines
Security Risk Assessment Template (Gitanjali Maria, GetApp)

Courses and Guided Projects

Web Application Security Testing by Alex Carraway, *Coursera*

Password Vulnerability Project

Example:

Detailed Security Risk Assessment Template by IT & Security Office, University of Iowa

- Research available open-source code, or similar tools to inspect. Collect feature recommendations from clients.
- Design software.
- Create software using Python that checks the strength of the user's password and tells if it is safe to use or not.

RFID Blocking

Radiofrequency identification tags present on credit cards and debit cards are prone to attacks from software that can read them from a certain distance, leading to illegal access to cards. The client wants you to either build an application to detect nearby radar accessing cards, or software that prevents RFID readers from reading cards.

- Research available avenues for the build, compare options and usability of open-source codes based on client needs
- Build the framework for the application/software
- Build the program – if unable to finish, must include a report for next steps

Strategic Information Technology Plan

The client wants a strategic information technology plan that will provide a roadmap and guidance to their organization in getting their IT assets and capabilities where they need to be to ensure future competitiveness and success in their industry.

Tools and Templates

Data Flow Diagram Template

- Research: complete a needs assessment, research the mission and vision statements of the company, research industry standards and competitor trends and capabilities
- Recommend: Determine hardware, software, and IT human resources recommendations
- Present training and implementation overview, draft budget and costs

Software Security Model

The client is developing a new management system and requires a security model to protect their data as well as support efficient access and usage. This will combine role-based security, record-level security, and field-level security to define the overall security rights of users within their system.

- Design a security model that organizes users by roles, responsibilities, or tasks and accompanying sets of privileges/access
- Provide users with access to the appropriate types of information required for their roles, while preventing access to records they do not need
- Support data sharing so that users and teams can be granted access to protected records for a specified collaborative effort

Courses and Guided Projects
File and Directory Manipulation with Linux for IT Engineers by Abdelrahman Tarek Hafez, *Coursera*

29.

COMMERCE (GENERAL)

Amanda McEachern Gaudet and Mackenzie Collins

Strategic Sales Prospecting Plan

The client would like a process to guide the sales team in developing an outreach process. Researching new prospects, identifying key contacts, and reaching out with compelling messaging.

- Compile relevant marketing information, gather sales data from previous years and search for trends.
- Assess your current situation, including weaknesses that will act as roadblocks and strengths that will help. Start sales forecasting based on demand trends and historical data. Identify any gaps that need to be filled to achieve your targets.
- Identify potential accounts that align with the current customer base. Ideate new initiatives based on opportunities you may have passed on in previous years.
- Present a report of research, analysis, and recommendations for target industry players which will assist the sales team with actionable recommendations that will increase sales conversions.

Sales Process Optimization

The client wishes for the group to review, document, and define the current sales strategy. Based on research and industry best practices, the students should develop new messaging and sales call scripts to help us increase the quality and number of leads generated.

Tools and Templates

Mural Business Process Model Diagram Template

- Research
    - Document current sales processes (map the customer journey, identify problem areas where prospects disengage from sales funnel)
    - Interview Sales Representatives
    - Research competitor's sales processes and inbound lead strategies

- Develop recommended changes for sales process and strategy
    - Create process handbook for Sales Team – outlining recommended sales process and strategy, including scripts and sales calls
- Final deliverable: 10-page report detailing research, recommendations and implementation plan, alongside a 10-minute presentation on the contents of the report as well as handbook created for the Sales Team
    - A visual graphic of the current sales process
    - Current touchpoints between prospect & sales team
    - Current sales collateral that is exchanged
    - Drop-off rates between each sales stage

Supply Chain Analysis

Courses and Guided Projects
Business Analysis and Process Management

The client wishes to understand how to best make advantage of outsourcing, with the goal of increasing efficiency – balancing time constraints, finances, etc.

- Determine the criteria used when deciding to outsource material availability along
- Find areas where the production process can be improved
- Strategize the outsourcing process, and find a reasonable solution to improve the process

User Behavior Analysis

Tools and Templates
Mural User Flow Template

Students will conduct focus group sessions with customers, to better understand user interaction with the business and optimize the customer journey. This could include:

- Usability of the website including user actions, intuitiveness, and user journey
- On-site walkthrough of the retail location to identify if the configuration of premises is designed for optimal user flows and positive customer experience
- Assessing the user interaction with a product to identify aspects that provide the most customer delight/ frustration

The final deliverable:

- A 10-page written report detailing the challenge, recommended solutions and action plan
- A 30-minute presentation with actionable recommendations based on the results
- Diagrams or wireframes that illustrate recommended changes

Courses and Guided Projects

Create User Stories In Miro
Analyze User Experience Survey Data in Miro
Customer Journey Maps with IoT Touchpoints in Miro
Define Product Vision with User Experience Maps in Miro

New Product/Service Proposal

Based on client budget, business goals, and target customer, students will brainstorm possibilities for a new product or service that would contribute to existing business model.

Examples:

- Innovating an existing product or product line to reach a new target customer.
- Adding a new service to your existing offering that will allow you up-sell existing customers and grow customer lifetime value.
- Adjust the bundling of existing products in an innovative way to reach new customers.
- Exploring competitor products to add to your portfolio.
- Considering a new category entry to reach a new market.

Courses and Guided Projects

The Product Lifecycle: A Guide by Dina Okeil Taha, *Coursera*

New Product Development by Ashraf Badr, *Coursera*

Final deliverables:

- An Executive Summary explaining how the new product or service will complement your existing offering and grow your customer base.
- A 2-minute “pitch” of their new idea, focused on achieving buy-in from organizational leadership.

30.

GAME DEVELOPMENT

Jacob Vorstenbosch

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=170#oembed-1

Before Meeting the Client

- Established a team meeting with members in a location easily accessible to all.
- Obtained contact information and set up a centralized means of communication.
- Discussed schedules to understand availability for future team and client meetings.
- Discussed skills and experiences grasp what is possible within this team environment.
- Understood limitations members have such as time constraints, commute, hardware, etc.
- Laid down what each member wishes to gain from this experience or skills they wish to learn during the semester.
- Read the capstone paperwork, ensured the capstone is aware of the client and the group.
- Discussed any knowledge of the client, researched anything that is public information on them or their company to understand possibilities in the contract.
- Prepared questions for the upcoming client meeting, as well as a formalized understanding of schedules, limitations, expectations and skills.

Meeting the Client

- Established contact with client and means of communication for the future, accounting for the style of meeting (virtual or physical), the frequency and the possibility of text communication.
- Discussed the project the client is wanting to have created during the semester, divided into:
    - Expectations of the project and an understanding of the finished product.
    - Timelines and Milestones to be reached.

    - Deliverables needed for the finished product.
    - Limitations for the team in both hardware and software.
- Understood the client's position for assistance if they are offering any, from technical experience to software acquisition.
- Noted the scope of the project within the twelve weeks given to ensure that it is possible.
- Checked for any uncertainties within that initial meeting that both parties understand could not be fleshed out perfectly within the initial meeting and made note of them.
- Solidified future expectations of the project once handed over to the client for better understanding deliverables and approaching workflow of documentation and assets.
- Discussed possible restrictions/'blockers' that team members may experience during development.
- Drafted a deliverable list that contains (in explicit language):
    - The envisioned final project itself – what it is expected to look like and contain.
    - The requirements of the projects fulfillment (features, assets, conditions) – draft a deliverable list outlining these requirements as well.
    - The project's final submission format.
    - Documentation pertaining to the specific project style and needs.
    - Legal documentation outlining the licenses and asset acquisition locations.
    - Milestone requirements if necessary – dates not required but encouraged.
- Solidified methods of communication and set up the next client meeting for discussions on progress, milestones, and future limitations.

Development of the Project

- A detailed method of client contact to every team member and outlined each client and team meeting approach to plan for them.
- Established possibilities that may require contacting the client outside of the standard communication times.
- Understood the relationship between the client and the team to be professional and to avoid casual conversations that do not coincide with the project.
- Scheduled formal and informal team meetings to give updates on team member progress and allow for members to work together on the project if necessary.
- Recognized team preferences for workflow and meeting styles, established early to avoid frustration.
- Established the limitations in skills and experiences now that the client meeting has solidified their necessity.
- Designated an individual (permanently or on a meeting basis) to take notes of the formal meeting minutes to ensure paper trail and keep on task.
- Guaranteed every team member has access to the deliverable list to avoid confusion.

Circumstantial Development Possibilities

- Assigned project manager for the team to coordinate meetings, organize future meetings and be the elected speaker at client meetings.
- Scheduled research and learning periods for team members learning new skill sets for the project.
- Established meeting times with the client for the assistance that they are able to offer.

Contact Capstone Representative If...

- Client wished for team to purchase software or hardware without discussing with capstone prior to the request.
- Client or Team Member did not appear for allotted meetings with team, nor communicated their absence and has been silent upon repeated communication attempts.
- New features have been added to the deliverable list without team knowledge or consent after the initial draft of the list and are now expected parts of the deliverable list. Client repeatedly will not budge even after a meeting occurred to discuss these new features.
- Client wished to discuss future capstone involvement with the team past the semester's completion, either through beginning a second project or externally.
- Client and team relations become strained due to numerous factors to the point of communication breakdown.

31.

FINANCE

Amanda McEachern Gaudet and Mackenzie Collins

Students from this program are expected to have reasonable knowledge in the following areas: financial analysis, security analysis, portfolio management, investments, budgeting, wealth management, credit management, financial planning, and trading.

Capitalization Table

Project Team will analyze the capitalization (cap) table of a survival stage start-up to help the start-up understand its valuation cap.

- Obtain a term sheet from the chief financial officer (CFO) and/or founder(s) of a survival stage start-up. Analyze and draw conclusions from the ownership
- Students will review the information in the cap table. If a guide is needed, students can use the following cap table assessment model. (Corporate Financial Institute; LTSE Services, Inc.)
- Students will put together a presentation or report to help the survival stage start-up understand its valuation cap

Financial Risk Analysis

The client wishes to understand the state of the market and their organization's level of risk.

- Build a market and financial risk model for the client's organization
- Perform a sensitivity analysis using both private and public data
- Present findings on our market risk exposure and provide recommendations

Courses and Guided Projects

Predict Sales Revenue With Scikit-Learn by Snehan Kekre, *Coursera*
Strategic Analysis with Financial Competitive Profile Matrix by Omodiaogbe Samuel, *Coursera*
Introduction to Business Analysis Using Spreadsheets by Omnya Khaled, *Coursera*
Company Reports: Understanding Form 10-K by Bekhruzbek Ochilov, *Coursera*

Local Economy Diagnosis

The client wishes to know how neighbouring jurisdictions or institutions have aggregated individual data points into single indexes of economic activity and socio-economic conditions.

- Research current indexes used by other jurisdictions/institutions.
- Provide a critical analysis of the methodology and approach.
- Make recommendations on the approach to be undertaken by the client when creating its own indexes.

Courses and Guided Projects

Predicting House Prices with Regression Using TensorFlow by Amit Yadav, *Coursera*
Predict Sales and Forecast Trends in Google Sheets by Tricia Bagley, *Coursera*

Funding Strategy

The client wants to diversify their sources of funding.

- Consider all the potential funding options and their viability.
- Write up grant drafts and requests for proposals which can be used as templates for future projects.
- Draft a funding strategy for the next 3-5 years that

Courses and Guided Projects

Cash Flow Modeling by Bekhruzbek Ochilov, *Coursera*

reflects client's needs and create an implementation calendar.

32.

MARKETING

Molly Howe; Mackenzie Collins; and Amanda McEachern Gaudet

Students from this program are expected to have reasonable knowledge in the following areas: marketing strategy, consumer behaviour, market research, digital marketing, marketing analytics, social media marketing, international marketing, and brand management.

Social Media Marketing

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://ecampusontario.pressbooks.pub/capstoneresources/?p=174#oembed-1

Improve SEO Positioning

The client wants to drive more traffic to their website.

- Keyword analysis to determine relevant search terms
- Design of a strategy document to place client's website on the top page and increase social media engagement
- Submit findings and recommendations for implementation, provide content suggestions, communication calendar and recommendations to optimize customer journey

Courses and Guided Projects

SEO Insights Rachel Sheldon, *HubSpot*

Search Engine Optimization with Squarespace Heather Dileepan, *Coursera*

Increase SEO Traffic with WordPress Stacey Shanklin-Langford, *Coursera*

Brand Marketing & SEO Tools Using Wix Abby Saey, *Coursera*

Digging Deeper into Audience Reports in Google Analytics Carma Baughman, *Coursera*

Optimize Website's Keywords & Pages Using Ubersuggest Dina Okeil Taha, *Coursera*

Increase Brand Awareness

The client wishes to increase brand awareness and as a result get higher customer conversions from marketing efforts.

- Define the core value proposition for various target customers; identify opportunities and threats.
- Assess where and how to improve the value proposition and ways to resolve concerns expressed by customers.
- Recommend marketing strategy and approach; create an integrated marketing campaign proposal.

Communications Strategy

Courses and Guided Projects

Email and Contact Marketing: How to create an email marketing strategy. From contact management and segmentation to email deliverability and analyzing

The client wants to better position their brand to effectively interest customers who may have an interest in their product. The aim is to reach and engage with key audiences and influencers through a blend of positioning, storytelling, content generation and influencer engagement.

- Evaluate the client's target market, users, and potential product marketing roadmap.
- Establish content creation guidelines and systems to distribute and analyze impact and progress made by communications strategy.
- Create a communications strategy that accounts for

messaging, distribution channels, and distribution partners.

your email sends. (Courtney Sembler, *HubSpot*)

Target Market Report

Tools and Templates
Feature Market Analysis Template

The client wishes to gain a better understanding of the target market to ensure they are positioning themselves in the right segment, offering effective benefits, and creating the best marketing messages.

- Perform analysis of potential target markets, current offerings, current targeted market, and the positioning of brand.
- Evaluate current customer base, develop a comprehensive report of our target market.
- Develop a sales and marketing strategy to engage customers, implement targeted prospecting. Make recommendations for further market penetration.

33.

ACCOUNTING

Amanda McEachern Gaudet and Mackenzie Collins

Students from this program are expected to have reasonable knowledge in the following areas: auditing, financial and managerial accounting, taxation, and financial statement analysis.

Accounting projects do not follow a simple framework as the other types of projects will. Therefore, it is extremely important that both the client and the students are diligent in ensuring the deliverables not only align with the project goal, but accumulate to a final result.

Usually these projects involve the client simply wanting the students to assist current employees on their daily duties. In these instances, a final deliverable may include a recommendation report from the student or a presented summary of their work and successes over the term. However, it is still important that the project deliverables relate back to a central goal, and stay within the scope as initially set in the Project Charter.

Video Module by Scott Peters

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Small Business Accounting & Tax Organization

The client is a small business that needs aid managing its accounting records and preparing to file taxes.

- Assist with preparation of financial and statistical statements and reports
- Account reconciliation
- Compile year-end files for annual return and tax return

Courses and Guided Projects

Create Accounting Statements by Mohamed Abul Kassem, *Coursera*
Getting Started with ProfitBooks by Colleen Haddleton, *Coursera*

Book-Keeping for Non-Profit Organizations

The client needs book-keeping for a registered charity with the CRA.

- Apply to government support for monthly wage and rent subsidies where applicable.
- Examine and finalize the client's past fiscal year's financial figure.
- Finalize the fiscal years Financial Statement for the CRA charity division.

Migration to Accounting Software

The client wishes to find a new accounting management software.

- Research accounting/financial software for the client based on their needs
- Draft a plan for the migration to the new software
- Present recommendation report and formal plan for the migration to a potential software to client

Accounting Process Analysis

The client needs assistance developing processes to make their financial and accounting more efficient.

- Assist with preparation of financial and statistical statements and reports

- Analyze financial information from financial statements and reports and identify discrepancies
- Develop a guideline on finance process and strategy, including templates for future uses

Accounting and Financial Business Plan

The client needs assistance developing sustainable financial processes for their growing business.

- Development of financial procedures documentation to guide clients' financial practices
- Develop accounting guidelines to ensure proper filing of revenue and expenses for tax purposes
- Present the contents of the documentation and guidelines

Courses and Guided Projects
Interest Rate Risk Management by Bekhruzbek Ochilov, *Coursera*

BADGES

Appendices – Certifications & Courses

Design Thinking

Name	Description	Source	Tool
Customer Journey Maps with IoT Touchpoints *by T. Bagley*	By the end of this project, you will be able to create a customer journey map that includes touchpoints from the internet (IoT). When customer journey maps include IoT touchpoints, they enable businesses to understand the holistic customer experience by considering their user experience (UX) and when user interface (UX) design may influence that experience. To identify IoT touchpoints with customer journey maps, you will gain hands-on experience applying design thinking, user interface knowledge, and context from each step of the customer journey in the Miro online visual collaboration platform for teamwork.	Coursera	Miro
Reverse Brainstorming *by T. Bagley*	By the end of this project, you will be able to lead team idea generation with reverse brainstorming in Miro. To do this, you will gain hands-on experience in Miro while you apply guided brainstorming strategies that focus on problems so that they can be identified and prevented before a product goes live.	Coursera	Miro
Build Inclusive Personas in Miro *by T. Bagley*	By the end of this project, you will be able to create an inclusive user persona that will help you leverage the opportunity to include customers and avoid excluding them from a brand experience. To do this, you will work on a project that will help you understand the benefits and use cases for inclusive personas while you gain hands-on experience building one in the Miro online visual collaboration platform for teamwork.	Coursera	Miro

Design a User Interface Story Map *by T. Bagley*	By the end of this project, you will be able to create a user interface story map that your business can use as a roadmap for release planning and as a framework for version and improvement releases over time. The power of the user interface story map is that it places the spotlight of the release process upon the user. This enables the business to stay focused on user experience and needs throughout releases of products and makes it easier for cross-functional teams to home in on what is necessary to gain and maintain user acceptance so that an exceptional user experience is sustained. To design a user interface story map, you will gain hands-on experience applying design thinking, user interface knowledge, and context from each step of the customer journey in the Miro online visual collaboration platform for teamwork.	Coursera	Miro

Human Resources

Name	Description	Source	Topics
Building a Hiring Plan by Analyzing Past Data in Sheets *by K. Bergner*	By the end of this project, you will understand how HR analytics are used to perform several analyses such as analyze total headcount to be hired, consolidate the position details, provide insights that would help the Talent Acquisition Manager to arrive at the sourcing strategy, set the selection process and the assessment guidelines. All these analyses will help create an annual hiring plan for an organization. All these steps in the project are performed by individuals of the Human Resources team.	Coursera	
Training and Development with Eduflow *by A. Saey*	Create a training and development course using Eduflow. Eduflow is a free, easy to use course builder that gives you the ability to create an interactive and customizable learning experience. Training and development is an essential part of operating any business. Without the personal and professional growth and advancement of your employees and team, your business will become stagnant. Eduflow makes continuing employee education easy and enjoyable. This project will teach you just how simple it is to create an effective training and development program for your team. Eduflow courses are easy to create, manage, and update. With their wide variety of educational activities, you are sure to meet all of your training and development needs and successfully grow your team's talents and advance their professional education.	Coursera	EduFlow
Use Canva to Design Digital Course Collateral *by S. Shanklin-Langford*	By the end of this project, you will create digital course collateral for use in your digital courses. You will be able to incorporate a color scheme, images, and other design elements for aesthetically pleasing and value-added course collateral. This course will include intermediate to advanced level skills using the free version of Canva. You will create a course promo graphic, a fillable PDF, a worksheet, and a course certificate for your digital course collateral in this project.	Coursera	Canva
Build an HR Analytics Dashboard Using Power BI *by A. Jha*	Build an attractive and eye-catching HR dashboard using Power BI. We will begin this guided project by importing data & creating an employee demographics page that gives us the overall demographic outlook of the organization. We will then create pie charts and doughnut charts to visualize gender & racial diversity. In the final tasks, we will create an employee detail page that will provide you with all the important information about any employee with just a click. We will also explore buttons, themes, slicers & filters to make the dashboard more interactive & useful. By the end of this course, you will be confident in creating beautiful HR dashboards that you can use for your personal or organizational purpose.	Coursera	PowerBI

Create Training Videos with PowtoonCreate Training Videos with Powtoon *by A. Saey*	Powtoon is a free cloud platform that allows the user to design animated presentations to better engage and educate their desired audience. In this course, we will design an attractive and educational animated training video. Adding animation to your presentation through movement of text and graphics creates a more dynamic and eye catching experience for your viewer. Powtoon can help you design an effective presentation where your information is displayed in an organized and well-timed fashion. Animation allows you to present material in a fun, visually enhanced way which can improve audience engagement and add emphasis to key ideas and concepts. Powtoon provides a number of free presentation options that can get you well on your way to becoming a better animator and video designer.	Coursera	Powtoon

Finance and Accounting

Name	Description
Getting Started with ProfitBooks *by C. Haddleton*	This project will give you the opportunity to familiarize yourself with the cloud-based platform, ProfitBooks. We will start this project by introducing you to the platform through creating an online account and taking a virtual tour of the software. This step will include updating your company profile in the settings. We will continue our introduction by building out a CRM through the customer profi feature. Once the customer profiles are created, you will be introduced to some beginner features on the platform. This project will focus on the Item feature for products and services & invoice feature for billing. Upon completion of this project, you will understand how to add customers to your CRM, inventory items and services, and invoice customers. You will have the confidenc to continue towards intermediate use of ProfitBooks in a continuation series. ProfitBooks is an online accounting and payroll management software for small businesses. It allows users to organize offices finances and track all activities related to their business. This free online tool allows you to manage your money without accounting knowledge, grow sales with powerful invoicing tools, track inventory with ease, and run your business with total confidence.
Building a Candlestick Chart *by B. Ochilov*	Learn how to use Python YFinance to extract stock price data and how to use Tableau to build a japanese candlestick chart.
Profit Analysis Using Economic Value Added *by B. Ochilov*	Learn how to calculate the Weighted Average Cost of Capital, calculate capital invested, finance charge, and NOPAT, and use financial statements to calculate Economic Value Added. Economic Value Added is one of the most critical metrics in financial modeling and analysis and is used to measure the profitability of the projects and management performance.

Analyze Digital Marketing Spend in Tableau*by C. Rojas*	Tableau is widely recognized as one of the premier data visualization software programs. For many years access to the program was limited to those who purchased licenses. Recently, Tableau launched a public version that grants the ability to create amazing data visualizations for free. Account members can also share and join projects to collaborate on projects that can change the world. In this project, we will learn how to create an account, how to upload and work with diverse data sets, and how to analyze marketing spend within Tableau. Learning to use this in-demand tool has applications in Marketing, Finance, Operations, Sales, and many other business functions.
Compare Stock Returns *by B. Ochilov*	Learn how to compare the performance of different securities using financial statistics (normal distributions) and the Google Sheets toolkit to decide which one performed the best in terms of risk-to-return (risk-to-reward) metrics. This will teach you how basic risk management using quantitative analysis is done and is applied in calculating mean returns of the stock, variance, standard deviation, th Sharpe ratio, and Sortino Ratio.
Measuring Stock Liquidity *by B. Ochilov*	Learn how to use Average Daily Traded Volume and Share Turnover to measure liquidity, use Depth of Market (DOM) and Bid-Ask Spread to compare liquidity, and use Variance Ratio to quantify liquidity.
Build Stock Returns Heatmap with Tableau *by B. Ochilov*	Learn how to extract stock data using Google Finance, build a Heat and Treemap in Tableau, build a stock returns dashboard in Tableau. Note: This course works best for learners who are based in the North America region. We're currently working on providing the same experience in other regions. This course's content is not intended to be investment advice and does not constitute an offer to perform any operations in the regulated or unregulated financial market.
Construct Stock Market Indices *by B. Ochilov*	Learn how to use Google Finance to import stock price data, identify the free float of the stock, use free-floated weighting to construct an index.
Investment Risk Management *by B. Ochilov*	By the end of the project, you will learn how to quantify risk-to-reward using Treynor Ratio, and calculate the value at risk for investment portfolio.

Business Operations and Project Management

Name	Description	Source	Tools
Introduction to Project Management by M. Peck	This course is designed to give you the fundamentals of Project Management. You will learn the basic principles of Project Management by managing a fundraising event for your local farmers market. You will designate responsible team members to help you, build a timeline and see the different ways that you can manage the project. Together, we will walk through not only the documentation, but also the theories and reasoning behind each task. You will learn how to look at a large project and break it down into manageable pieces and then how to build an action plan so that you hit your deadlines with your team. By the end of the course, you will have created a Project Scope document, Stakeholder Responsibility Matrix, sequenced a task list, added task owners, and a explored several popular project views using Project Management software. You will be ready to tackle a project on your own or will be equipped to take a higher-level course in Project Management.	Coursera	
Creating the Work Breakdown Structure *by H. Aougab*	Learn how to build a WBS for your project. You will decompose your project into the main elements, then further decompose those into even smaller, more manageable pieces of work. As we decompose our project into smaller elements, we will be using decomposition rules such as the 100%, and the mutually exclusive elements rules. You will continue decomposition until you get elements that can be estimated properly and that you can delegate to a person or a team. You will also create a WBS dictionary, explaining the elements in your WBS. We will do all of this in Google Sheet, but the same concepts can be used with any tool, i.e. Excel SP, WBS creation tools, etc.	Coursera	Google Sheet

Design a Project Schedule *by H. Aougab*	Learn how to develop a schedule for your project. You will combine your project activities (activity list), their relationships (precedence) and their duration estimates to produce a project schedule. We will start by considering the list of the activities necessary to create our project scope, by decomposing the lowest elements of our WBS (see guided project: Develop a WBS), the relationships of the activities in a project precedence network diagram (there is another Guided Project for Developing the precedence Network Diagram), the estimate for the activities duration (And yes there another GP for Estimation the activity Durations). We will use ProjectLibre, an open source project scheduling swr to develop our project schedule. The concept are the same, if you are using another project scheduling tool. You will enter different type of tasks, different kind of relationships, and task durations, customize the calendar to your environment and produce a project schedule.	Coursera	
Create a Company Vision and Mission Statement *by M. Flores*	By the end of this project, you will learn how to create a company vision and mission statement from scratch using the free version of Canva. Mission and vision statements are important foundational elements of any organization. A Mission Statement defines the company's business, its objectives and its approach to reach those objectives. A Vision Statement describes the desired future position of the company. You will be able to incorporate a colour scheme, different charts, and other design elements for aesthetically pleasing and value added business marketing collateral. We can use Canva to complete this project because it provides all the tools you need to create an organized and visually appealing product while offering a variety of options for sharing and collaboration. You will learn how to plan and organize your ideas and utilize graphic design tools as you create a vision and mission statement from scratch that will serve as a template for future projects.	Coursera	Canva

Scrum Team Building Using Games and Interactive Tools *by K. Grady*	By the end of this project, you will have created a Scrum Master's toolbox of interactive websites and games you can use to improve communication, increase cohesion and camaraderie, and facilitate a smoother sprint experience. In every Scrum ceremony, there are opportunities to inspire improved teamwork and help your team build professional bonds that will make them more effective. Scrum should allow developers to double their output in half the time, as the saying goes, but solid teamwork is necessary to work efficiently. Using online tools and including games will build engagement and interest in team members and offer an opportunity for the Scrum Master to step back and observe, find weak points, and facilitate improvements. Whether distributed or collocated, your team will build strength and efficiency with the toolbox you will build.	Coursera	
Creating a Product-Market Fit with Value Proposition Canva by O. Samuel	By the end of this guided project, you will be able to use the Value Proposition Canvas (VPC) to position your products and services around what your customers truly value or need. The value proposition is the place where your company's product intersects with your customer's desires. It's the magic fit between what you make and why people buy it. And for us to practically demonstrate how the fit is created, we will analyze a Social Venture startup. The example of the case study would empower you to use the model to analyze your startup or any other company of your choice. The project is for entrepreneurs who want to test their product-market fit. Also, for intrapreneurs who want to modify their existing products, or more importantly, develop new ones that truly reflects the needs of the customers. At the end of the project, you will be able to use the Value Proposition Canvas to differentiate your offering from competition	Coursera	Canvas
How to Write an Effective Project Objective by A. Paolillo	In this project you will write effective project objectives in Asana using the SMART methodology, connect them with overarching project and business goals, link deliverables and plan in Asana for the objectives execution.	Coursera	

Introduction to Project Management *by M. Peck*	This course is designed to give you the fundamentals of Project Management. You will learn the basic principles of Project Management by managing a fundraising event for your local farmers market. You will designate responsible team members to help you, build a timeline and see the different ways that you can manage the project. Together, we will walk through not only the documentation but also the theories and reasoning behind each task. You will learn how to look at a large project and break it down into manageable pieces and then how to build an action plan so that you hit your deadlines with your team. By the end of the course, you will have created a Project Scope document, Stakeholder Responsibility Matrix, sequenced a task list, added task owners, and explored several popular project views using Project Management software.	Coursera	
Getting Started with Power BI Desktop *by A. Yadav*	Learn the basics of using Power BI Desktop software. We will do this by analyzing data on credit card defaults with Power BI Desktop. Power BI Desktop is a free Business Intelligence application from Microsoft that lets you load, transform, and visualize data. You can create interactive reports and dashboards quite easily, and quickly. We will learn some of the basics of Power BI by importing, transforming, and visualizing the data.	Coursera	PowerBI
Create a Budget with Google Sheets *by J. Schroeder*	By the end of this project, you will be able to build a basic budget using Google Sheets. You will use a template to add, delete, edit, and format a budget to meet the needs of your personal or professional goals. You will be able to read the summary tab, share the budget, and create permissions for others to access, format the charts, and use conditional formatting. You will also be able to take the Google Sheets Budget and put it into presentable files.	Coursera	Google Sheets

Tableau Public for Project Management *by M. Zvezdkina*	Now more than ever, people need access to data to gain insights and make quick business decisions. Some of the world's top organizations choose Tableau to help teams organize, visualize, and analyze data to drive better results while saving time and reducing costs. Adding Tableau Public to your skillset will put you ahead of the curve in the current job market, aid in professional growth, and yield better business results. 'Tableau Public for project management and beyond' guided project is for anyone who wants to quickly get hands-on experience with the public version of Tableau business intelligence software. If you are preparing for Project Management certification, completing this project will be complementary to your knowledge. By the end of the project, you will have a foundational knowledge of Tableau Public and will learn how to build and analyze charts, create dashboards, and share your data insights online. There are no prerequisites to take this guided project.	Coursera	Tableau
Create a big Number KPI Dashboard in Tableau Public *by C. Rojas*	Tableau is widely recognized as one of the premier data visualization software programs. For many years access to the program was limited to those who purchased licenses. Recently, Tableau launched a public version that grants the ability to create amazing data visualizations for free. Account members can also share and join projects to collaborate on projects that can change the world. By the end of this project, you will learn how to create an easy-to-understand communication that will focus attention on specific metrics that guide decisions.	Coursera	Tableau
Create a Financial Statement Using Google Sheets *by J. Schroeder*	By the end of this project, you will be able to populate the Google Sheets Financial Statement Template and feel comfortable updating the different tabs on the Financial Statement Template. You will have a better understanding of how to use this tool to help track and present financial information for your company.	Coursera	Google Sheets
Jira and Agile Project Management *by A. Paolillo*	Create your first project in Jira using a Kanban board for agile methodology, creating issues, epics and tasks, setting up WIP limits, building a roadmap sharing work with team members and managing the workflow with transitions.	Coursera	Jira
Create a Project Tracker with Airtable *by H. Kong*	Airtable is a cloud collaboration service that combines the features of databases and spreadsheets. In this 1.5 hour guided project, you will learn the basics of relational database and get up to speed with Airtable and create a project tracker. No prior experience is required. Although experience with spreadsheets is helpful.	Coursera	AirTable

Build a Product Roadmap by E. Tabakov	learn what makes a good Product Roadmap, how to use Aha! to combine your product artifacts in a well-structured Product Roadmap, and how to customize Aha! to match the processes and requirements in your team. Using Aha!, step by step we will start from a blank sheet of paper to get to a comprehensive product definition. We will structure the information in a way that allows to switch between execution level information, like Features and Release and also being able to zoom out to high-level information like Goals and Vision.	Coursera	Aha!
Business Analysis & Process Management *by M. Ismail*	This is a guided project for both beginners and professionals managing small to medium enterprises or working in the fields of business analysis & business process management. It provides you with the initial know-how of analyzing businesses from a process view which allows you to further develop the skill needed to create solutions to your current business problems. By the end of this project, you will be able to: analyze business processes and find solutions to existing business problems; define your business processes, their objectives and how they flow within the organizational context; identify the different process stakeholders and their roles in your business processes; and evaluate the current business from a process view, break down the problems, and find an applicable business solution.	Coursera	
Business Model Canvas Analysis *by J. Albert*	By the end of this guided project, you will be fluent in identifying and creating Business Model Canvas solutions based on previous high-level analyses and research data. This will enable you to identify and map the elements required for new products and services. Furthermore, it is essential for generating positive results for your business venture. This guided project is designed to engage and harness your visionary and exploratory abilities. You will use proven models in strategy and product development with the Miro platform to explore and analyse your business propositions. We will practice critically examining results from previous analysis and research results in deriving the values for each of the business model sections.	Coursera	Miro

The Product Lifecycle: A Guide *by D.O. Taha*	Learn how to understand the product development stage, you will learn to differentiate and locate products in the introduction stage of the product life cycle as well as doing the needed financial analysis for products in different product life cycle stages	Coursera	
Strategic Analysis with Financial Competitive Profile Matrix by O. Samuel	By the end of this guided project, you will be able to use the Financial Competitive Profile Matrix (FCPM) to analyze your industry and identify your competitive advantage with key financial indicators. FCPM is a strategic management tool that enables you to benchmark your company in relation to competition and then identify the relative strengths and weaknesses of all the competitors based on some Financial Critical Success Factors (FCSFs) analysis. The FCSFs are assigned weight based on their importance, ranked on their strengths and weaknesses, then the weight is multiplied by the rank to determine weighted score. The sum of the weighted score reveals the company that has competitive advantage or disadvantage in the industry. To demonstrate the application of the FCPM, we will use spreadsheet to analyze a division of our energy services company together. Example on the case study would empower you to use the model to analyze your company or any other company of your choice. The project is for business leaders who want have a deep insight on their competitive environment. Also, for strategist and financial analysts who are interested in helping organization in making informed strategic decisions. At the end of the project, you will be able to use the FCPM to analyze your company, identify the strengths and weaknesses of the competitors, and then use it to determine your strategic direction	Coursera	

Predict Sales and Forecast Trends *by T. Bagley*	By the end of this project, you will understand use cases for conducting forecasts in your workplace and be able to confidently conduct a trend forecast in any spreadsheet software. You will also understand when it is necessary to refine a model to improve the accuracy of forecasted trends. At work we use forecasted data for a multitude of purposes including developing strategies, budgets, to provide the right amount of resources to meet demand, and to create the best customer experience possible. In this course, you will build baseline prediction skills with statistical forecasting by designing, creating, and interpreting a sales trend forecast. You will do this as we work side-by-side in the free-to-use software Google Sheets.	Coursera	Google Sheets.
Visualize Project Milestones in Miro *by T. Bagley*	By the end of this project, you will be able to leverage Gantt charts to plan, schedule, and graphically represent the progression of a project plan over time so that stakeholders and sponsors can quickly understand the status, dependencies, and future requirements.	Coursera	Miro
Introduction to Project Management with ClickUp*by A. Saey*	In this project, we will learn how to create and organize a ClickUp workspace to best meet your project management and business needs. We will also learn how to use the tool to better collaborate and communicate with your team. Whether you're assigning tasks, pushing out important information, scheduling meetings, or working through a to do list, ClickUp can help you keep track of it all. ClickUp is a free, cloud-based program that helps to improve both your productivity and your budget. ClickUp helps to make both individuals and groups more productive in their work by consolidating tasks, documents, goals, and communication into one, all inclusive platform.	Coursera	ClickUp
Automating Tasks with Zapier *by C. Rojas*	This project gives you easy access to time-saving tools used by entrepreneurs, business administrators, and department leaders. We'll learn about how to use a tool called Zapier to automate a common business activity, responding to a new subscription on a website, and sharing the information with other departments. By the end of this project, you can use Zapier to automate a variety of tasks that will reduce errors and save you time. Saving you time at work will free up your time to devote to other interests. If you're already using Zapier you may find new apps to connect and tasks to automate. If you're struggling, you'll see solutions and tips that can make things easier. If you want more time in your life this project will help serve as your guide.	Coursera	Zapier

Get Started with Asana*by A. Paolillo*	In this guided project we will get started with Asana project management software by creating a free trial account online, project, task and subtasks. We will create sections to group tasks and manage execution with team members, comments, files and dependencies. change the views and manage your work with tracking, sorting and filtering. We will achieve a comprehensive overview of project management and Asana with the most important concepts needed to start running your projects.	Coursera	Asana
Create a Simple Gantt Using Excel *by A. Rodriguez*		Coursera	Excel
Project Scheduling: Estimate Activity Durations*by H. Aougab*	In this guided project you will learn how estimate the durations of your project activities. You will estimate the duration of your project activities, using techniques such as Expert Judgment, Analogy, and Parametric Estimation. Once you have developed a WBS, and decompose the work packages (lowest elements in the WBS) into the necessary activities, you can use the bottom up estimation technique. To improve the accuracy of your estimate you will learn how to use the three-point estimation technique, taking into account risk and uncertainty. You will also learn how use statistics to come up with an Interval Estimate with a up to a 99% confidence level.	Coursera	
Business Communication: Written and Verbal Presentation Skills	This course allows students to develop effective written and verbal communication strategies specifically for the workplace. From idea gathering to drafting to delivery, this course will prepare students to effectively write, present, and communicate in a variety of methods and styles, tailored to professional audiences.	OER	
Create an Interactive KPI Management Dashboard *by E. Kund*	Learn how to connect to data, create key performance indicators, create sparkline charts, create a dashboard map, create dual axis charts and put it all together in a well-formatted and interactive dashboard.	Coursera	Tableau

Create a Balanced Scorecard to Align Priorities *by T. Bagley*	By the end of this project, you will be able to create a balanced scorecard to communicate team goals and measure the progress made toward those goals. To do this, you will gain hands-on experience incorporating customer, financial, internal process, and employee perspectives within a balanced scorecard in the Miro online visual collaboration platform for teamwork.	Coursera	

Network Security and Information Technology

Name	Description	Source	Tools
Microsoft Azure Relational Databases *by B. McKeown*	Learn how to create, and configure a Microsoft Azure Database for MySQL server and database. We will do this by walking through the process of creating a free trial subscription on Azure, logging in and getting familiar with the Azure Portal. We will create a Resource Group in preparation for creating the Azure database and then step through the process of configuring and deploying an Azure Database for MySQL server. From here we will connect securely to the cloud based server and create a new database. We will then populate the database with some sample data, query and update the data using the MySQL command line tool. Once complete we will restore the database to a point in time using the Azure restore database process and finally clean up unused resources keeping costs to a minimum.	**Microsoft**	Microsoft Azure Database MySQL
Work With Azure Data Storage *by D Savovic*	This project teaches you avariety of ways to store data in Azure. You will learn the basics of storage management in Azure, how to create a Storage Account, and how to choose the right model for the data that you want to store in the cloud. After this project you will be able to define the appropriate settings for each storage account and create a storage account using the Azure portal. You will also understand how data lake storage can be created to support a wide variety of big data analytical solutions with minimal effort. In this 1-hour long project-based course, you will learn how to (create a storage account using the Azure portal, create an Azure Data Lake Store Gen 2 using the portal, upload data into the Data Lake Storage Gen2 using Azure Storage Explorer and copy data using Azure Data Factory).	Coursera	Microsoft Azure

Predict Sales Revenue with scikit-learn *by S. Kekre*	Build and evaluate a simple linear regression model using Python. You will employ the scikit-learn module for calculating the linear regression, while using pandas for data management, and seaborn for plotting. You will be working with the very popular Advertising data set to predict sales revenue based on advertising spending through mediums such as TV, radio, and newspaper. By the end of this course, you will be able to: – Explain the core ideas of linear regression to technical and non-technical audiences – Build a simple linear regression model in Python with scikit-learn – Employ Exploratory Data Analysis (EDA) to small data sets with seaborn and pandas – Evaluate a simple linear regression model using appropriate metrics	Coursera	scikit-learn
Get Started With Microsoft Data Analytics	Businesses need data analysis more than ever. In this learning path, you will learn about the life and journey of a data analyst, the skills, tasks, and processes they go through in order to tell a story with data so trusted business decisions can be made. You will learn how the suite of Power BI tools and services are used by a data analyst to tell a compelling story through reports and dashboards, and the need for true BI in the enterprise.	Microsoft	PowerBI
Getting Started with Power BI	Learn how you can leverage Power BI to easily build reports and dashboards with interactive visualizations and see how other organizations have used this solution to drive business results with actionable insights. As a consumer, you'll work in the Power BI service to review and interact with content that has been shared with you. This module provides the foundational information that you need to work effectively in the Power BI service.	Microsoft	PowerBI
Getting Started with Power BI Desktop by A. Yadav	Learn the basics of using Power BI Desktop software. We will do this by analyzing data on credit card defaults with Power BI Desktop. Power BI Desktop is a free Business Intelligence application from Microsoft that lets you load, transform, and visualize data. You can create interactive reports and dashboards quite easily, and quickly. We will learn some of the basics of Power BI by importing, transforming, and visualizing the data. This course is aimed at learners who are looking to get started with the Power BI Desktop software. There are no hard prerequisites and any competent computer user should be able to complete the project successfully.	Coursera	PowerBI

PowerBI Report Development Crash Course *by A. Navgire*	In this project, we will see in detail the steps required to create a PowerBI report using PowerBI Desktop and also we will publish this report on PowerBI service in the respective workspace. This project is designed for beginners who have no idea about PowerBI so they can quickly get a glimpse of how to create a report in PowerBI.	Coursera	PowerBI
Prepare Data for Analysis	You will explore Power Query as you learn to extract data from different data sources and choose a storage mode and connectivity type. You will learn to profile, clean, and load data into Power BI in preparation for modeling your data.	Microsoft	Power Query PowerBI
Model Data in PowerBI	Success with Power BI begins with a great data model. In this module, you will learn how to design a data model that is intuitive, high-performing, and simple to maintain. You will learn about using DAX language to create measures. Those measures will help you create a wide variety of analytic solutions. Additionally, you'll learn how to improve performance with your Power Query data retrieval tasks.	Microsoft	PowerBI Power Query
Work with Power BI Visuals	Learn how to choose from the exceptional visuals that Power BI makes available to you. Formatting visuals will direct the user's attention to exactly where you want it, while helping to make the visual easier to read and interpret. You will also learn about how to use key performance indicators (KPIs).	Microsoft	PowerBI
Power BI Report Development *by A. Navgire*	In this project, we will see in detail the steps required to create a PowerBI report using PowerBI Desktop and also we will publish this report on PowerBI service in the respective workspace. This project is designed for beginners who have no idea about PowerBI so they can quickly get a glimpse of how to create a report in PowerBI.	Coursera	PowerBI
Create a data-driven story with Power BI Reports	Power BI helps you create vibrant, highly useful reports that form a cohesive, data-driven story. You'll learn how to use buttons, bookmarks, and other navigation techniques. Additionally, you'll learn how to integrate Power BI reports with other applications. Power BI visuals can interact with each other, letting the user see exactly which data is appealing to them. You'll also explore Power BI report themes to create a unified reporting experience across all reports.	Microsoft	PowerBI
Create Dashboards in Power BI	Microsoft Power BI dashboards are different than Power BI reports. Dashboards allow report consumers to create a single artifact of directed data that is personalized just for them. Dashboards can be comprised of pinned visuals that are taken from different reports. Where a Power BI report uses data from a single dataset, a Power BI dashboard can contain visuals from different datasets.	Microsoft	PowerBI

Create Paginated Reports in Power BI	Paginated reports allow report developers to create Power BI artifacts that have tightly controlled rendering requirements. Paginated reports are ideal for creating sales invoices, receipts, purchase orders, and tabular data. This module will teach you how to create reports, add parameters, and work with tables and charts in paginated reports.	Microsoft	PowerBI
Perform Analytics in Power BI	You will learn how to use Power BI to perform data analytical functions, how to identify outliers in your data, how to group data together, and how to bin data for analysis. You will also learn how to perform time series analysis. Finally, you will work with advanced analytic features of Power BI, such as Quick Insights, AI Insights, and the Analyze feature.	Microsoft	PowerBI
Work with AI Visuals in Power BI	This module describes the AI capabilities of Power BI. In this module, you will: – Use the Q&A visual. – Find important factors with the Key influencers visual. – Use the Decomposition Tree visual to break down a measure.	Microsoft	PowerBI
Manage Workspaces and Datasets in Power BI	Once you have created your Power BI data sets and reports, it's time to deploy them so the users can take advantage of all of your hard work. In this Learning Path, you will learn how to create workspaces in the Power BI service. You will deploy your Power BI artifacts here and share them to your users. You will also learn how to connect Power BI reports to on-premise data sources. Your users will appreciate seeing the latest data in your reports, so you will configure automatic refresh for your Power BI datasets. Row-level security allows you to create one report, but have users be restricted to see only the data that applies to them. This targets data to users, without having to create multiple reports.	Microsoft	PowerBI
Create an Interactive Graph in Tableau*by E. Carlson*	By the end of this guided project, learners will have created an interactive graph that applies principles of data visualization to tell a story using basic sales data. This project will illustrate some of the basic features of Tableau software and allow learners to obtain a good introduction to using the open source software, Tableau Public. In this project, learners will use sample data as a building block to create a shareable interactive data visualization chart. This skill is helpful for anyone interested in learning more about how to begin working with data to tell a story, highlight change over time, see and understand data, or make well-informed data driven decisions.	Coursera	Tableau

Wireshark for Basic Network Security Analysis *by M. ElSharkawy*	Learn how to use Wireshark to capture the Network Traffic you need and analyze it securely. You will have a better understanding of encrypted and unencrypted traffic and how to differentiate between them. You will dig deeply into unencrypted protocols such as RADIUS, HTTP, DNS and Telnet by generating the Traffic of each of them and capturing it yourself. Also you will generate, capture and look into secure and encrypted protocols such as HTTPS and SSH. Additionally, you will learn how to capture HTTPS Traffic and decrypt them by using a pre-master secret key.	Coursera	Wireshark
Create a Lead Generation Messenger Chatbot by A. Jha	Learn how to build a lead generation chatbot with Email and Google sheets automation which will be able to interact with your customers and generate lead automatically for you. We will be automating the entire process using email automation and Google sheets so that you will receive a mail every time a lead is generated and a copy of the contact information of the lead will be saved on Google sheets. The chatbot will be able to interact with your customers, generate a lead, take a booking, get ticket claims, send us their message and many more. By the end of this project, you will have a fully functioning chatbot deployed to your Facebook page and interacting with your customers through Messenger in real-time. You do not need any programming knowledge because we will be using the flow builder interface from Chatfuel which is very interactive, intuitive and logical. But you do need a Facebook account and a fully functioning Facebook business page in order to test the bot.	Coursera	Chatfuel

Database Design with SQL Management Studio by A.A. Souidan	Design a database system by identifying the entities and their attributes as well as the relations between these entities. Furthermore, you will get to implement the database system that you have designed using Microsoft SQL Server through SQL Server Management Studio. This project will have you explore key concepts of database design and will have you get introduced to the building blocks of the world of databases.	Coursera	SQL Server Management Studio
Web Application Security Testing by A Carraway	Learn the fundamentals of how to use OWASP Zed Attack Proxy (ZAP). This tool greatly aids security professionals and penetration testers to discover vulnerabilities within web applications. You will learn how to perform a basic web app vulnerability scan, analyze the results, and generate a report of those results. This course includes steps on how to configure the browser proxy to passively scan web requests and responses by simply exploring websites. This course will also include how to use dictionary lists to find files and folders on a web server, and how to spider crawl websites to find all the links and URLs. Finally, the end of the course gives a brief overview of how to intercept, view, modify, and forward web requests that occur between the browser and web application.	Coursera	OWASP Zed Attack Proxy (ZAP)

Marketing and Sales

Name	Description	Source	Tools
Email and Contact Marketing *by C. Sembler*	Master the fundamentals of email marketing. This email marketing course will teach you how to create an email marketing strategy that grows your business, and your career. From contact management and segmentation to email deliverability and analyzing your email sends, you'll learn how to build an email marketing strategy that is human and helpful and builds trust with your contacts.	HubSpot	
Business Marketing Brand Kit *by S. Shanklin-Langford*	By the end of this course, you will create a marketing ready brand kit for a business. You will take a closer look at the free tools provided in Canva in order to create your brand kit. You will be able to incorporate a complete business style guide in order to create brand recognition as part of your multi-media marketing strategy. This course will include step by step guides to building an easily accessible style guide, creating folders for project organization, and building branded templates to add to your brand kit. You'll have media that is ready for print or posting in your brand kit.	Coursera	Canva
HubSpot CMS For Marketers *by R. Sheldon*	Learn how to use HubSpot CMS Hub to create a high-performing website. Learn how to design and create a user-friendly, high-performing website with CMS Hub. Optimize your website and content strategy for search engines, and track your site's performance over time. Leverage the power of the HubSpot CRM with your CMS to personalize your website experience.	HubSpot	HubSpot CMS
Sales Management Training: Strategies for Developing Successful Modern Team *by K. Jepson*	Learn how to define your target market, create a scalable sales process, and build training, coaching, hiring, and onboarding programs to help your sales team grow better. Define your sales process and playbook, and communicate it effectively. Build sales training, coaching, and onboarding programs to help your sales team grow better. Develop a sales recruiting and hiring strategy that elevates your team.	HubSpot	

Create Customer Support Data	By the end of this project, you will create a Google Sheet that transforms a business's raw customer support data into a useful data set that provides the business with an overview of past support requirements. You will be able to determine which areas of the business are exceeding standards and which departments are performing below standard. This course will include an introduction to Google Sheets, how to leverage formulas, how to link multiple tabs, and how to utilize Google Sheets to determine if support is being provided within the required levels of service.	Coursera	Google Sheets
Create an A/B Web Page Marketing Test with Google Optimize	Learn how to create an A/B web page marketing test with Google Optimize and Google Analytics, personalizing weight option, goals, targeting, activation, and using a sample Google Sites to practice.	Coursera	Google Optimize Google Analytics
SEO *by R. Sheldon*	Use insights from keyword research and reporting to improve your search performance. Evaluate and improve your website's SEO Build backlinks to your website at scale to increase your website's visibility on the search engine results page.	HubSpot	
Search Engine Optimization with Squarespace *by H. Dileepan*	Squarespace is an all-in-one website platform that allows you to build a sleek and custom website without knowing any code. It also comes equipped with several options for optimizing your website for search engine optimization (SEO). Using the techniques found here, you'll learn to fully optimize your Squarespace site so that it's properly indexed and ranked by search engines. In this project, we'll cover site-level optimization, optimization for local search, on-page SEO, and blogging optimization. You'll leave this course feeling confident in your ability to use the tools that Squarespace provides to improve your site's searchability.	Coursera	Squarespace

Brand Marketing and SEO Tools Using Wix *by A. Saey*	In this project we are going to design a company brand using Wix's website builder, branding and marketing tools, and their SEO (search engine optimization) tools. By the end of this project you will feel confident and capable in improving the strength of your company's brand and your website's search ability. Wix is a free website building platform that combines professional designs with easy to use editing features. In addition to their website building capabilities, Wix can also help you build your brand through a wide variety of helpful marketing tools included on their platform. Whether you're designing a logo or business cards, trying to send out fun and informative emails, or trying to create posts for social media, Wix can do it all. Wix even has a number of search engine optimization (SEO) tools which can help you increase your website's visibility on web search engines.	Coursera	Wix
Getting Started in Google Analytics *C. Baughman*	In this project, you will learn how to connect your website to Google Analytics. You will be able to use Google Analytics to understand how your website is performing. You will become familiar with the Google Analytics interface and the standard reports to better understand your website audience. You will learn how to interpret this data to improve your website performance and effectiveness.	Coursera	Google Analytics
Custom Reports in Google Analytics*C. Baughman*	In this project, you will create three custom reports in Google Analytics, using three different methods. You will understand the building blocks of a custom report. You will determine what data is needed for a custom report. And, you will create the custom report to best meet your analysis and monitoring needs. You will also discover the Google Gallery where you can find various types of custom reports, and import the ones that best meet your needs.	Coursera	Google Analytics

Digging Deeper into Audience Reports in Google Analytics *by C. Baughman*	In this project, you will discover some of the potentially less familiar Audience Reports. You will learn about the Active Users report, the Lifetime Value report, the Cohort Analysis report, the Benchmarking reports and the Users Flow Report. But, even more importantly, you will learn how to use these reports to help you make better decisions when it comes to reaching and engaging your website audience.	Coursera	Google Analytics
Marketing with LinkedIn *by J. Arteno*	Learn how to use LinkedIn to promote your small business by creating a LinkedIn business page, connecting to the right customers, using the LinkedIn messaging feature, posting relevant content, joining groups, and creating your own group for your small business. This course will benefit small business owners with limited to no social media marketing experience.	Coursera	LinkedIn
Inbound *by J. Munroe & K. Jepson*	Discover the fundamentals of inbound, the inbound methodology and the flywheel and learn how to apply them to your business. The Inbound Certification Course teaches you how to run a successful inbound business, from marketing to sales to services.	HubSpot	
Inbound Marketing *by J. Munroe, C. Lee, & K. Susvilla*	Learn inbound marketing techniques that range from content creation to social promotion to converting and nurturing leads and beyond. By the end of this certification course, you'll be well on your way to building your inbound marketing strategy.	HubSpot	
Sales Enablement *by K. Jepson*	The Sales Enablement Certification will teach you how to develop a marketing-driven sales enablement strategy. This course was designed with marketing managers in mind, but other marketers as well as sales leaders can benefit from learning the principles involved in this approach to sales enablement.	HubSpot	
Social Media Marketing *by C. King, B. Ducharme, D. Topkin, & C. Braccialini*	Develop an engaging and effective social media strategy for your business. Build an inbound social media strategy that delights your customers and grows your bottom line	HubSpot	

Growth-Driven Website Design by *L. Summerfield*	In the Growth-Driven Design certification course, you'll learn how to build and optimize a peak-performing website that delivers user value and drives business growth. This includes video training, tools, quizzes, and templates to help you develop a strategy, build a launch pad website, and implement data-driven continuous improvement. The course is made up of seven lessons and a 55-question exam. In addition to the content, you'll gain access to our global GDD Slack community, where you can ask questions and collaborate with the instructors and thousands of GDD practitioners.	HubSpot	
Content Marketing *by L. Thibeault, A. Donahue, A.J. Beltis, G. Delloue, C. Braccialini, J. Champion, & M. Howells-Barby*	Learn a content creation framework for producing effective content on a consistent basis. Create and repurpose content that both humans and search engines will love. Become a stronger, leaner, and more strategic content marketer	HubSpot	
Digital Marketing *by J. Munroe, A. Donahue, M. Howells-Barby, C. Braccialini, J. Champion, C. King, & C. Sembler*	Digital Marketing is any kind of marketing that happens on a digital platform. Whether it's on your website, your social media, or through email, it's digital marketing. On the other hand, Inbound Marketing is a business methodology that attracts customers by creating valuable content and experiences tailored to them. It's a way to market (usually using digital marketing tactics) that draws in qualified leads, rather than blasting a message out to a mass audience. The Digital Marketing Certification Course will teach you how to become an effective digital marketer with an inbound-first mindset.	HubSpot	

Digital Advertising *by C. Braccialini, D. Mastin, B. Sanders, D. Topkin, & J. Munroe*	Today's digital advertisers require many skills to be successful: design, audience targeting, optimization, analysis, and more. Organic content channels are flooded and not reaching as many people as before, so paid advertising is an effective way to get your content to the top of people's feeds (and their minds). In this certification course, you'll learn everything you need to create a customer-centric advertising strategy, including journey-based advertising, bidding and targeting strategies, paid search, social media advertising, programmatic, reporting, and more.	HubSpot	
HubSpot Reporting *by J. Munroe, A. Kim, K. Jepson, & A. Gulati*	Learn how to incorporate data driven decision making at your organization with the use of the HubSpot reporting tools. This certification course consists of eight lessons that discuss data literacy, and HubSpot reporting tools across the CRM, Marketing Hub, CMS Hub, Sales Hub, and Service Hub. To showcase your knowledge, you'll be assessed with quizzes and worksheets at the end of each lesson. At the end of the final lesson, you'll take a 60 question, multiple-choice exam and a hands-on practicum to earn your certification.	HubSpot	HubSpot Software
Service Hub Software *by A. Gulati*	The Service Hub Software Certification demonstrates your ability to execute an inbound service strategy using HubSpot's Service Hub. This certification course consists of six lessons that discuss customer journey mapping, and HubSpot tools such as help desk, knowledge base, and customer feedback. To showcase your knowledge, you'll be assessed through practical exercises and quizzes at the end of each lesson. At the end of the final lesson, you'll take a 60 question, multiple-choice exam to earn your certification.	HubSpot	HubSpot Service Hub Softare

Getting Started With Figma *by H Baker*	Figma is a web-based graphics editing and user interface design app that works on your browser. What does that really mean? You can access your projects from multiple devices without installing software. You and others can work on the same file in real-time taking the project from brainstorming to prototypes. You can use Figma to design briefs, create storyboards, reduce complexity on websites and even design your CV or resume all while collaborating with others in realtime! By the end of this project, you will go through the steps to learn about the application to develop a web page or homepage for your own app.	Coursera	Figma
Get Started with Facebook Business Manager *by K. Michel*	By the end of this project, learners will know how to get started with Facebook Business Manager. According to Facebook, “Business Manager allows advertisers to manage their marketing efforts in one place and share access to assets across their team, partner agencies and vendors.” By the end of this project you will know how to create a Facebook page, a Facebook Business page, and understand how to effectively manage your Facebook Business page using Facebook Business Manager.	Coursera	Facebook
Building a Business Presence With Facebook Marketing *by K. Bergner*	By the end of this project-based course, you will understand the basics of applying Digital Marketing on Facebook. The course will walk you through setting up digital marketing for a fictitious company, the Belltown Bakery in downtown Seattle. The course begins with setting up a fictitious business page on Facebook. You will then learn how to navigate your Facebook account, including setting up advertisements. You will then learn how to post content and boost a post. We will then cover tools available to engage with Facebook users and grow your audience on Facebook.	Coursera	Facebook

Organic Marketing: Facebook Groups *by L. Labello*	In this project, the learner will build a client profile, master Facebook groups netiquette, and utilize them as a Marketing tool. We will learn how to generate clients using a free organic method without paid advertising. By the end of this project we will construct a step by step daily Facebook group action plan to promote a small business, and develop a strong influential Facebook account to attract high paying clients.	Coursera	Facebook
Measure a Marketing Strategy Using Facebook Insights *by K. Walker*	By the end of this project, learners will have a better understanding of ways they can enhance their Facebook Marketing strategies, which will ultimately improve users' Facebook Insights. We will take an in-depth look at how to incorporate marketing strategies that will more likely enhance overall analytics, and learners will develop a deeper understanding of how to use Facebook Insights to track and measure strategic marketing efforts. Having this knowledge, allows Facebook users to more easily adapt and update strategies according to Insight results to get the most out of their Facebook strategy.	Coursera	Facebook
Create a Twitter Ad *by E. Ibekwe*	Learn how to – understand Twitter's ad dashboard – create an ad on Twitter – launch your first ad on Twitter	Coursera	Twitter

Create a Promotional Video *by A. Jha*	Learn how to create a script and then create a Promotional Video around it and make the video appealing using video backgrounds, images and animations. By the end of this project, you will be confident in creating an eye-catching and professional Promotional Video in Canva which you can use to Market on Social Media Platforms. We will be using Canva for this purpose and we will create a Promotional Video slide by slide. We will begin by creating video slides around the Customer's pain points and introduce our Solutions. We will then persuade our target customers through USPs and Testimonials and finish the video with a Call to Action.	Coursera	Canva
Use Mailchimp to Build an E-mail Marketing Campaign *by S. Shanklin-Langford*	By the end of this project, you will create a customized email for a business marketing campaign using a free version of Mailchimp. You will be able to create an interactive email complete with a call to action that is professional and engaging to your audience. You'll set up an email campaign as one of several powerful digital marketing campaign tools available in Mailchimp.`	Coursera	Mailchimp
Frictionless Sales *by K. Jepson*	In the world of inbound, businesses are visualized as flywheels instead of funnels. A flywheel is a model adapted by HubSpot to explain the momentum you gain when you align your entire organization around delivering a remarkable customer experience. You can increase that growth by adding force to the flywheel or by removing friction from it. Sales organizations in general have no problem using force. If you want to help your sales team grow better, you need to find ways to remove friction. Learn how to use the frictionless selling framework so that your team can spend more time selling. Also, discover how to align your team with your target buyer and how to transform your team through a culture of learning.	HubSpot	

Inbound Sales *by M. Roberge, K. Jepson, E. Bailey, B. Signorelli, & A. Quinn*	Learn how to identify new prospects, connect with them, explore their needs, and advise them on a path forward. Identify the best contacts to reach out to Connect with and earn the attention of your most promising leads. Run sales calls and presentations that drive results.	HubSpot	
Analyze Digital Marketing Spend in Tableau *by C. Rojas*	Tableau is widely recognized as one of the premier data visualization software programs. For many years access to the program was limited to those who purchased licenses. Recently, Tableau launched a public version that grants the ability to create amazing data visualizations for free. Account members can also share and join projects to collaborate on projects that can change the world. In this project, we will learn how to create an account, how to upload and work with diverse data sets, and how to analyze marketing spend within Tableau.	Coursera	Tableau
Predict Future Product Prices *by R. Ahmed*	Understand the theory and intuition behind Facebook times series forecasting tool – Import Key libraries, dataset and visualize dataset – Build a time series forecasting model using Facebook Prophet to predict future product prices – Compile and fit time series forecasting model to training data – Assess trained model performance	Coursera	Facebook Prophet
Create a Sales Dashboard Using Power BI*by A. Jha*	Build an attractive and eye-catching sales dashboard using Power BI in a black and blue theme that will make your audience go “wow”. We will begin this guided project by importing data. We will then create bar charts and pie charts to visualize the sales data and then position the graphs on the dashboard. In the final tasks, we will create interactive maps to visualize sales data by countries and markets. By the end of this course, you will be confident in creating beautiful dashboards with many different kinds of visualizations.	Coursera	PowerBI

Google Ads for Beginners *by I. Sinha*	Learn how to get started with Google Search Ads and create successful campaigns to reach new customers and grow your business. We'll work on Google Ads, Google's online advertising platform. You will drive qualified traffic, or best-fit customers to your business while they're searching on Google, for products and services like the ones that you offer.By the end of the project, you will be able: – Create your account on Google Ads – Set up the first campaign structure – Set up conversion tracking – Add relevant audience, set bids and budgets and targeting – Set up ad groups – Do effective keyword research – Create impactful and relevant ads – Navigate through the Google Ads Dashboard – Learn about Tools and Settings available on Google Ads – Optimize ad campaigns to generate conversions and be profitable	Coursera	Google Ads

Game Development

Name	Description	Link	Tools
Real-Time Rendering Fundamentals by Sjoerd de Jong	This class dives into the essentials of real-time rendering. Learn key concepts and terminology, get insight on workflows and limitations, and find out why performance is one of the most crucial elements.	**Unreal Engine**	Unreal Engine
Introduction to Packaging Projects by Paul Kind	This class introduces setting up a project for packaging and deployment to multiple platforms, covering Windows, Android, iOS, and HTML deployment, as well as performance considerations to think about.	Unreal Engine	UnrealEngine
Getting Started with Datasmith by Mathew Wadstein	This course covers how to use Datasmith to bring AEC and manufacturing 3D assets into Unreal Engine. Find out how to install Datasmith exporters, how to import and work with assets, and how to showcase the results.	Unreal Engine	UnrealEngine
Post Processing Essentials by Sjoerd de Jong	This video introduces the many post-processing features in Unreal Engine 4. Learn the basic concepts of post-processing, how to manipulate settings, and how to use a variety of effects.	Unreal Engine	UnrealEngine
Generating Oddly Oscillating Globe Lenses Yourself by Alexander Paschall	In this course, you'll learn how to create googly eyes and add them to objects.	Unreal Engine	UnrealEngine
Character Kickstart by Sjoerd De Jong and Mario Palmero Pavon	In this course, you'll explore character actors in Unreal Engine, including AI-controlled actors, actors for networking, and more.	Unreal Engine	**UnrealEngine**
Interactive Material Swaps Using Blueprints by Simone Lombardo	In this course, we explore how to create an interactive widget for swapping Materials using Blueprints.	**Unreal Engine**	UnrealEn**gine**

Name	Description	Link	Tools
Introduction to Twinmotion by Matt Doyle	In this first part of a three-part learning course, you'll get a comprehensive overview of the user interface and tools available in Twinmotion, and learn how to import ARCHICAD, Revit, SketchUp, and FBX content.	Unreal Engine	UnrealEngine
Optimizing Projects for Real-Time by Steve Biegun	In this course, you'll learn techniques to enhance performance and improve user experience when working on Unreal Engine projects.	**Unreal Engine**	UnrealE**ngine**
Materials Kickstart by Sjoerd De Jong and Mario Palmero Pavon	**I**n this course, you'll learn about the philosophy behind Materials in Unreal Engine, including how they're made and how they can be manipulated to create different effects.	Unreal Engine	UnrealEngine
Optimizing Geometry for Real-Time by Steve Biegun	This course explores how to optimally prepare models in a 3D modeling program before they are used in Unreal Engine. You'll learn the tools and techniques needed to make data transfer into the engine smooth and easy.	Unreal Engine	UnrealEngine
Materials – Understanding the Production Workflow by Sjoerd de Jong	In this course, we look at improving workflows when working with Materials. Learn how to reuse Material settings, change a Material's look without recompiling, and share global data into many Materials at once.	Unreal Engine	UnrealEngine
Pixel Streaming – How To Work With Interactive Video In Engine	In this course, you'll learn how to deliver high-quality Unreal Engine content to any device, anywhere, using the Pixel Streaming plugin.	Unreal Engine	UnrealEngine
Comprehending Projects and File Structure by Mathew Wadstein	This course dives into the fundamentals of the Epic Games Launcher, creating projects, and adjusting project settings, as well as providing a tour of important project files.	**Unreal Engine**	**UnrealEngine**

Name	Description	Link	Tools
Creating Photoreal Cinematics with Quixel	This course walks you through the creation of a scene from Quixel's Rebirth cinematic, exploring the concepts and tools used.	Unreal Engine	UnrealEngine
Programming Kickstart	In this course, you'll learn about programming in Unreal Engine along with tips and tricks for creating and developing C++ projects.	Unreal Engine	UnrealEngine
Animation Kickstart by Sjoerd De Jong and Mario Palmero Pavon	This course dives into Unreal Engine's animation pipeline, providing an insight into its evolution and explaining how to get the most out of it.	Unreal Engine	UnrealEngine
Exploring Level Design for Game Development by Patrick Haslow	This course covers the fundamental steps in prototyping game levels, demonstrating how to build basic level geometry for block-outs using a variety of methods.	Unreal Engine	UnrealEngine
First Hour in Unreal Engine 4 by Mathew Wadstein	This introductory course to Unreal Engine 4 and the Unreal Editor will take you through the basics of project creation, navigation, and finding your way around the UI, as well as touching on lighting and Blueprints.	Unreal Engine	UnrealEngine
SketchUp to Unreal Fundamentals by Daniel Brown	In this course, we walk through the steps for leveraging SketchUp designs in Unreal Engine, including a look at the tools and techniques that can improve the process.	Unreal Engine	UnrealEngine; SketchUP
Engine Structure Kickstart Sjoerd De Jong and Mario Palmero Pavon	Learn how Unreal Engine is structured and how each part interacts with the others, as well as advice on best practices for working with the engine.	Unreal Engine	UnrealEngine
Getting to Know Materials for Design Visualization by Matt Doyle	This course introduces the basics of creating PBR (Physically Based Rendered) Materials for archviz, including how to use the Material Editor, supported texture formats, and using Material expressions.	Unreal Engine	UnrealEngine

Name	Description	Link	Tools
Blueprint Kickstart by Sjoerd De Jong and Mario Palmero Pavon	In this course, you'll explore the Blueprint visual scripting system and how it can be harnessed for different types of projects.	Unreal Engine	UnrealEngine
Landscape Essential Concepts	In this course, you'll learn how to use Unreal Engine's Terrain tools to create outdoor environments.	Unreal Engine	UnrealEngine
Creating a Scatter Tool with Blueprints	In this course, author Joel Bradley explains how to create a tool that randomly scatters user-selected Static Mesh files inside a defined area, such as flowers in a flower bed.	Unreal Engine	UnrealEngine
Materials – Exploring Essential Concepts	In this video, we look at creating and using Materials in a production environment. Explore the different types of Materials in Unreal Engine, the ingredients for creating them, and how to use them.	Unreal Engine	UnrealEngine
Bringing a Scene To Life in Twinmotion	In this second part of a three-part learning course, you'll learn how to add life to a Twinmotion project using built-in tools and assets. We'll look at materials, landscape, entourage, lighting, and more.	Unreal Engine	UnrealEngine
Introducing Unreal Engine	In this video, we walk through the fundamentals of the Unreal Editor and its components, covering the interface, functionality, and important settings to adapt the Editor to your workflow.	Unreal Engine	UnrealEngine
Blueprints – Essential Concepts	This video introduces the fundamentals of the Blueprint Visual Scripting system. Learn what Blueprints are, how to create and work with them, and about some of the different types available.	Unreal Engine	UnrealEngine
Studio Lighting	This course explains the look development process for Studio Lighting, looking at the assignment of IES light profiles, light panels for fill lighting and reflections, and how to create a turntable Blueprint.	Unreal Engine	UnrealEngine

Name	Description	Link	Tools
Creating VR Walkthroughs	This course covers basic VR theory and best practices, adding teleportation and interaction into a VR scene in Unreal Engine, creating VR-based user interfaces, and optimizing your VR content.	Unreal Engine	UnrealEngine
High-End Product Lighting and Rendering (Exterior)	In this course, we go through the steps for setting up your scene to make use of High Dynamic Range (HDR) sky-domes. Discover the tools you need to make simple reusable outdoor lighting scenes.	Unreal Engine	UnrealEngine
Lighting Essential Concepts and Effects	This course explains the basics of setting up lighting in Unreal Engine. Learn about the different types of lights, how to use them together, and how to add special effects like fog and reflections.	Unreal Engine	UnrealEngine
Revit to Unreal Engine Fundamentals	This course explains how to export models from Revit to Unreal Engine, how to swap materials, migrate elements from other projects, enhance surfaces, light the scene, and then create a real-time multi-camera animation.	Unreal Engine	UnrealEngine
Rendering Kickstart	This course takes you through the process of rendering a frame in Unreal Engine and provides tips for achieving the best results.	Unreal Engine	UnrealEngine
Balancing Blueprint and C++ in Game Development by Rob Brooks	In this course, you'll learn how to make the most out of Unreal Engine by utilizing Blueprints and C++ in ways that complement their individual strengths. By the end, you'll be able to assess which option best fits your needs in your own projects.	Unreal Engine	UnrealEngine
Mastering Twinmotion 2020	This course teaches how to use the key features of Twinmotion 2020.2 and provides tips and tricks for getting the most out of the software.	Unreal Engine	UnrealEngine

Name	Description	Link	Tools
Blueprints and Gameplay for Game Designers	This course explores how to use the Blueprint visual scripting system along with other Unreal Engine features to create gameplay elements and prototype ideas.	Unreal Engine	UnrealEngine
Preparing Design Data for Optimal Performance	This course teaches the basics of moving design data into Unreal Engine from applications like 3ds Max, and introduces functionality like lightmaps, creating collisions, and adjusting textures in the engine.	Unreal Engine	UnrealEngine
Getting to Know UVW Mapping for Architectural Visualization	This course has been designed to help you quickly get up and running with UVW Mapping process and to understand how it affects both static meshes and levels in Unreal when creating architectural visualization pieces.	Unreal Engine	UnrealEngine
Understanding Global Illumination for Architectural Visualization	This course introduces the techniques you'll need to create outstanding lighting in UE4. Learn how to master the subtle adjustments that can make lights in Unreal Engine breathtaking.	Unreal Engine	UnrealEngine
Stylize Renders with Post-Process Materials	This course teaches strategies for non-technical animators and artists to achieve stylized renders with post-process Materials. Learn the theory, methodology, and tools to experiment in your own projects.	Unreal Engine	UnrealEngine
Physics-Based Shotviz	In this course, you'll learn about shotviz. Save time and money while filming on location when you scout and pre-plan setups using physically accurate lighting and cameras on a virtual location.	Unreal Engine	UnrealEngine

Name	Description	Link	Tools
AEC Blueprints by Example	In this course, you'll create four Blueprint templates that can be used in AEC projects including automatic doors, connected switched lights, Material switching, and construction scripts, learning essential Blueprint concepts in the process.	Unreal Engine	UnrealEngine
Real-Time Compositing Basics	In this introductory course to compositing in Unreal Engine, you'll learn the basics of creating an A over B composite. Follow along and learn different techniques to get the best results from the Composure plugin.	Unreal Engine	UnrealEngine
Best Practices for Creating and Using Plugins	This master class explains how to develop plugins for UE4. Learn techniques and best practices for creating, compiling, and using plugins. This class is suitable for developers and non-developers alike.	Unreal Engine	UnrealEngine
Material Editor Fundamentals for Game Development	Learn the basics of building shaders for games in this course, from creating your first material right through to customizing it to your requirements.	Unreal Engine	UnrealEngine
3D Map Navigation in VR	This course teaches how to create a 3D map and motion controller-based navigation system for architectural models in virtual reality.	Unreal Engine	UnrealEngine
Making the Switch from Unity to Unreal Engine	This course teaches Unity users how to transfer their skills to Unreal Engine. Learn about setting up, asset importing, lighting, Materials, scripting, packaging, and visual scripting.	Unreal Engine	UnrealEngine
Build a Detective's Office Game Environment by Justin Mohlman	Learn how to create a scene from scratch, from planning and prototyping to adding the elements that will take it to an alpha state.	Unreal Engine	UnrealEngine

Name	Description	Link	Tools
Sound and Space by Richard Stevens and Dave Raybould	In this course, we'll look at all aspects of sound and space, exploring how correct use of sound can make the spaces in a game feel more realistic and immersive.	Unreal Engine	UnrealEngine
Creating a Level Blockout for Game Development by Patrick Haslow	In this course, you'll learn how to build a fully playable 3D space, from initial planning in 2D and rough blocking out using primitive Static Meshes, through adding more detailed geometry and final refinements like lighting and collisions.	Unreal Engine	UnrealEngine
Dynamic Audio by Richard Stevens and Dave Raybould	In this course, you'll learn how to use audio in response to dynamic game events and conditions.	Unreal Engine	UnrealEngine
Getting Started in VR with Unreal Engine by Rune Berg	In this three-part course, you'll learn how to create a virtual reality game. First, learn how to create a flexible template you can use in all your VR projects.	Unreal Engine	UnrealEngine
Ambient and Procedural Sound Design by Richard Stevens & Dave Raybould	In this course, you'll learn the core techniques you need to get started in game audio design in Unreal Engine.	Unreal Engine	UnrealEngine
Introduction to AI with Blueprints Chris Wilson	This course introduces Unreal Engine's AI tools, exploring how AI agents work within a video game environment and the systems used to achieve realistic behaviors.	Unreal Engine	UnrealEngine
Advanced Techniques for Architects by Chris Wilson	This course provides advanced techniques, tips, and tricks for creating stunning architectural visualizations in Unreal Engine.	Unreal Engine	UnrealEngine

Name	Description	Link	Tools
Creating PBR Materials by Matt Doyle	This course explains how to create high-quality physically based shaders. Learn about working with Material instances at runtime using Blueprints, building Material parameter collections, and more.	Unreal Engine	UnrealEngine
Becoming an Environment Artist in Unreal by Clinton Crumpler	In this course, you'll learn the fundamentals of working as a junior environment artist with Unreal Engine for the first time in a production scenario.	Unreal Engine	UnrealEngine
Preparing Engineering Data by Paul Neale	This course explores importing CAD data to Unreal Engine via Datasmith. Learn how to correct geometry and Material issues in applications like 3ds Max, how to organize and set pivot points, and more.	Unreal Engine	UnrealEngine
Creating an Architectural Interior Real-Time Project by Matt Doyle	This course teaches new users how to create real-time architectural visualizations in UE4. Learn how to import your design using Datasmith, adjust lights and Materials, package your project, and more.	Unreal Engine	UnrealEngine
Converting Blueprints to C++ by Sam Pattuzzi	This course teaches you how to convert a Blueprint project to C++, explaining the core concepts of using C++ in Unreal Engine. Learn how to create an AI agent that senses, reacts to, and navigates the world around them.	Unreal Engine	UnrealEngine
Creating an Architectural Exterior Real-Time Project by Matt Doyle	This course covers everything you need to know about creating architectural exteriors in Unreal Engine. Learn the process from start to finish, with a special focus on adding terrain, foliage, and other effects.	Unreal Engine	UnrealEngine
Unreal Futures: Careers in Advertising	New to Unreal Engine? Explore the Advertising industry with MediaMonks and create your first 3D advertisement for your portfolio.	Unreal Engine	UnrealEngine

Name	Description	Link	Tools
An In-Depth Look at Real-Time Rendering by Sjoerd de Jong	This course provides an in-depth look at how UE4 renders out a single frame. Learn how real-time rendering impacts performance, features, and workflows.	Unreal Engine	UnrealEngine
Twin Stick Shooter with Blueprints by Zak Parrish	This course looks at the Twin Stick Shooter project, walking through a Blueprints/C++ workflow. Learn the coding framework, including how to build up characters, how to pass damage via Blueprints, and much more.	Unreal Engine	UnrealEngine
Building Better Pipelines by Sam Deiter	In this master class, we explore ways to take your visualization pipeline to the next level. Learn how to build better meshes, Materials, and textures, as well as how to improve optimization and performance.	Unreal Engine	UnrealEngine
Making a Blueprint Product Configurator by Paul Kind	This video covers the use of Blueprints to add functionality and usability to your Unreal Engine project. Learn the basics of Blueprints and find out how to create a fully functioning product configurator.	Unreal Engine	UnrealEngine
Materials Master Learning by Paul Kind	Learn the many ways to work with Materials in the engine, starting with an introduction to the general behind-the-scenes architecture, the concept of physically-based rendering (PBR), and how to work with textures.	Unreal Engine	UnrealEngine

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