

**COURSE OUTLINES: BC3406 Business Analytics Consulting**

<b>Academic Year</b>	2022-2023	<b>Semester</b>	2		
<b>Course Coordinator</b>	Prof Damien Joseph				
<b>Course Code</b>	BC3406				
<b>Course Title</b>	Business Analytics Consulting				
<b>Pre-requisites</b>	AB1202, BC2402, BC2406 Co-req: BC2407, AB3601 Year 3 standing				
<b>No of AUs</b>	4				
<b>Contact Hours</b>	3hr x 13 weeks = 39				
<b>A) Course Aims</b>					
<p>This course develops competencies for a career in business analytics consulting. It is a career option that provides incumbents an opportunity for challenging work, continued self-development, and access to important professional networks. Career opportunities are available in global consulting organizations practicing in a variety of business settings and business disciplines, and in small consulting firms offering niche/boutique services. In addition, many businesses have developed internal consulting departments to provide advisory services within the organization and often in conjunction with consulting services offered by third party firms.</p>					
<b>B) Intended Learning Outcomes (ILO)/Objectives</b>					
<p>By the end of this course, you will be able to:</p> <ol style="list-style-type: none"> <li>1. Articulate viewpoints with civility and with the aim of moving the class to new insights</li> <li>2. Apply business domain knowledge to analyze and understand business problems</li> <li>3. Apply business analytics techniques to develop insights</li> <li>4. Formulate recommendations based on insights to resolve business problems</li> <li>5. Develop teamwork and interpersonal skills through consulting best practices</li> </ol> <p>See <a href="#">Annex F</a> for learning objective taxonomy.</p>					
<b>C) Course Content</b>					
<ol style="list-style-type: none"> <li>1. Consulting and the Consultant</li> <li>2. The Business Analytics Process</li> <li>3. Communication of Insights</li> <li>4. Storytelling with data visualizations</li> <li>5. Data Governance</li> <li>6. Business Analytics Hackathon</li> </ol>					
<b>D) Assessment (includes both continuous and summative assessment)</b>					
<b>Component</b>	<b>ILO Tested</b>	<b>NBS Learning Goal (Refer to Annex E for list)</b>	<b>Weighting</b>	<b>Team/Individual</b>	<b>Assessment Rubrics (Please insert rubrics as Appendix)</b>

Class contribution	1	Oral communication	10%	Individual	Annex B Class Contribution Rubric
Case analyses	2 to 4	Problem solving and decision making	30%	Individual	Annex B Case Analysis Rubric
Business Analytics Hackathon	2 to 5	Problem solving and decision making; Oral and written communication; Teamwork and interpersonal skills	60%	Team  Individual	Annex B Business Analytics Hackathon Rubric  Annex B Business Analytics Hackathon Rubric  Annex B Teamwork & Interpersonal Skills (Peer Evaluation) rubric. This component will moderate each team member's performance on the hackathon.
Total			100%		

### E) Formative feedback

Feedback is central to this course. You will receive written or verbal feedback about your assignments. The written feedback will be consistent with the criteria of the rubric for a given assignment. Verbal feedback will be provided in class during the discussions pertaining to performances on those assignments.

### F) Learning and Teaching approach

Approach	How does this approach support you in achieving the learning outcomes?
Seminars	BC3406 adopts a flipped classroom and a cooperative method of learning. As such, the instructors will play a facilitating role where students take a self-directed learning approach to content, and where they express their points of view and analysis in class discussions.
Individual assignment(s)	Readings. A critical skill in consulting is the ability to read materials quickly, and to extract important and relevant information. The goal is to find the important concepts and ideas, and to skim the rest of the article to get the key insights.  Case Analyses. Cases facilitate the anchoring of knowledge to a real-world context. Students are expected to read, think and analyse each case before class. The prescribed

	<p>readings for the week and other external materials form resources that students may draw from in their analysis of a case.</p> <p>Each case analysis requires a formal executive brief that should be no longer than 3 pages, single spaced. This brief should provide a concise description of critical issues, problems, quantitative and qualitative analyses, and conclusions or recommendations. Submit each case analysis via NTULearn by 23:59 hrs on the Thursday before the next class.</p>
Class Participation	<p>Sessions are more valuable when there is a diversity of opinions based on different interpretations and perspectives. You are expected to make significant contributions during class and case discussions. The assessment of class participation includes: quality of comments, application of readings to discussions, and sharing of key, pertinent information from external readings (e.g. other courses, newspapers and journals).</p>
Business Analytics Hackathon.	<p>You will work closely in teams for the duration of the data hackathon. As in actual consulting teams, your team will be a mix of members with different functional and technical skills. The most effective teams achieve superior performance by first discussing personal backgrounds, expertise, and experiences. Such teams go on to develop a common direction, align goals, motivate themselves towards a common direction, and are committed towards achieving superior quality of performance.</p> <p>The data hackathon is a relatively risk-free environment and is the last opportunity to work on improving your teamwork and interpersonal skills. Your team members will evaluate you on your teamwork and interpersonal skills at the completion of the hackathon.</p> <p>The deliverables of the data hackathon, a report, will be assessed on meeting the client's requirements and on the quality of recommendations.</p> <p>As alluded to above, teamwork and interpersonal skills are important for superior performance of the team in this assignment. Teamwork and interpersonal skills will be assessed by a peer evaluation using the Teamwork and Interpersonal skills rubrics (Annex B). This assignment will use the peer evaluation to moderate each individual team member's performance on this assignment. For example,</p> <ul style="list-style-type: none"> <li>- if a team member receives 10/10 on the peer evaluation, this student receives the full overall marks received by the team;</li> <li>- if a team member receives 7/10 on the peer evaluation, this student receives the 70% overall marks received by the team;</li> <li>- if a team member receives 5/10 on the peer evaluation, this student receives the 50% overall marks received by the team.</li> </ul> <p>It is possible that a a team member will receive 0/10 on the peer evaluation. In this case, the instructor will conduct an investigation as to whether that student truly deserves an overall 0 marks for this assignment.</p>
<b>G) Reading and References</b>	
<p>Reference textbooks:</p> <ul style="list-style-type: none"> <li>• Block, Peter. <i>Flawless Consulting: A Guide to Getting Your Expertise Used</i>. San Francisco: Jossey-Bass/Pfeiffer, 2011. <ul style="list-style-type: none"> <li>○ Block, Peter. <i>Flawless Consulting</i>, <a href="http://www.flawlessconsulting.com">www.flawlessconsulting.com</a>, 2016.</li> </ul> </li> </ul>	

- Simon Chesterman. 2014. *Data Protection Law in Singapore: Privacy and Sovereignty in an Interconnected World*. Academy Publishing

Journal articles available through NTU Library's e-journals database:

- Week 1:
  - Dominic Barton; David Court. *Making Advanced Analytics Work For You*. **Harvard Business Review**, 2012, Vol. 90 Iss. 10, pp. 78-83.
  - David A. Nadler. *Confessions of a Trusted Counsellor*. **Harvard Business Review**, 2005, Vol. 83 Iss. 9, pp. 68-77.
- Week 2:
  - Christian Madsbjerg; Mikkel Rasmussen. An Anthropologist Walks into a Bar.... *Harvard Business Review*, 2014, Vol. 92 Iss. 3, pp. 80-89.
  - Frank van den Driest; Stan Sthanunathan; Keith Weed. *Building an Insights Engine*. **Harvard Business Review**. 2016, Vol. 94 Iss. 9, pp. 64-14.
- Week 3:
  - Scott Berinato. *Visualizations That Really Work*. **Harvard Business Review**, 2016, Vol. 94 Iss. 6, pp. 92-100.
  - Robin Hogarth; Emre Soyer. *A Picture's Worth a Thousand Numbers*. **Harvard Business Review**. 2013, Vol. 91 Iss 6, p. 26
  - Gary A Williams; Robert B Miller. *Change the Way You Persuade*. **Harvard Business Review**, 2002, Vol. 80 Iss. 5, pp. 64-73.
- Week 4:
  - W Brian Arthur. Where is Technology Taking the Economy? *McKinsey Quarterly*, Oct. <https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/where-is-technology-taking-the-economy>
  - Ellen R. Auster; Trish Ruebottom. *Navigating the Politics and Emotions of Change*. **MIT Sloan Management Review**, 2013, Vol. 54 Iss. 4, pp. 31-36.
  - Jeffrey D. Ford; Laurie W. Ford. *Decoding Resistance to Change*. **Harvard Business Review**, 2009, Vol. 87 Iss. 4, pp. 99-103.
- Week 5:
  - Brett Danaher; Michael D. Smith; and Rahul Telang. *Copyright Enforcement in the Digital Age; Empirical Evidence and Policy Implications*. **Communication of the ACM**, 2017, Vol. 60 Iss. 2, pp. 68-75.
  - Vijay Khatri; Carol V. Brown. *Designing Data Governance*. **Communication of the ACM**, 2010, Vol. 53 Iss. 1, pp. 148-152.
- Week 13:
  - Arthur N. Turner. *Consulting Is More Than Giving Advice*. **Harvard Business Review**, 1982, Vol. 60 Iss. 5, pp. 120-129.
  - Stijn Viaene; Annabel Van den Bunder. *The Secrets to Managing Business Analytics Projects*. **MIT Sloan Review**, 2011, Vol. 53 No. 1, pp. 65-69.

## H) Course Policies and Student Responsibilities

**General.** You are expected to complete all assigned pre-class readings and activities, attend all seminar classes punctually and take all scheduled assignments by due dates. You are expected to take responsibility to follow up with course notes, assignments, and course related announcements for seminar sessions you have missed. You are expected to participate in all seminar discussions and activities.

**Absenteeism.** Absence from class without a valid reason will affect your overall course grade. Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an

excuse letter from the relevant bodies. If you miss a seminar, you must inform the course instructor via email prior to the start of the class.

*Free-riding.* For the team project, members of each team are strongly encouraged to discuss and agree on each member's tasks and responsibilities early, and to amiably resolve any subsequent dispute(s) as a team prior to consulting their course instructor. Do not flag out free riding to the instructor and if the problem persists despite corrective intervention by team members and/or instructor, disciplinary repercussions may include grade penalty and/or other consequences correspond to the severity of the misbehaviour. Thus, the overall mark for a team member is subject to downward moderation based on the team's peer evaluation.

Each member should complete an online peer assessment via eUreka within two days after the submission of the final report (see rubric in in hackathon brief).

*Academic Integrity.* Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion, and cheating. Please refer to NTU Academic Integrity Handbook for further guidance on academic integrity. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

#### I) Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [academic integrity website](#) for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

#### J) Course Instructors

Instructor	Office Location	Phone	Email	Consultation Hours
Associate Professor Damien Joseph	S3-01A-52	6790-4831	adjoseph@ntu.edu.sg	Consultations by prior appointment via email.

#### K) Planned Weekly Schedule

Week	Topic	Cases/Assignments	Readings/ Activities
1	Consulting and the Consultant:		- Block Ch 1-4, 6 - Barton & Court 2012 Nadler 2005

2	The Business Analytics Process	- <i>Nils Baker</i>	- Block Ch 7, 10-13 - Madsbjerg & Rasmussen 2014 - Van den Driest et al 2016
3	Team Building	<i>Alumni Giving</i>	- Block Ch 10-13 - Madsbjerg & Rasmussen 2014 Van den Driest et al 2016
4	Business Analytics Hackathon Briefing	Discussions with stakeholders on case and problem	- Hackathon partners - Industry expert(s)
5	Review of business analytics techniques		
6	Storytelling with data visualization: Communication of Insights	Tableau (e-learning)	- Berinato 2016 - Hogarth & Soyer 2016 - Williams & Miller 2002
7	Storytelling with data visualization: Refinement of Insights: A Workshop on Storytelling		
8	Business Analytics Hackathon: Interim Review	- Discussions with stakeholders on data and findings	- Block Ch 14-17 Hackathon partners
9	Change Management	- <i>Technology Driven Transformation at Comair Limited</i>	- Block 8-9 - Auster & Ruebottom 2013 - Ford & Ford 2009 - Turner 1982 - Viaene & Bunder 2015
10	Data Governance		- Khatri & Brown 2010 - Danaher et al 2017 - Chesterman Ch 1-4, 8 - Data Governance Institute Framework
11	Clinics		
12	Business Analytics Hackathon: Evaluations of Submissions		Hackathon partners
13	Business Analytics Hackathon: Finals and Presentations		Hackathon partners

**ANNEX B: ASSESSMENT CRITERIA FOR REVISED COURSE****Class Contribution Rubric**

<b>Criterion</b>	<b>1 – Below Expectations</b>	<b>2 – As Expected</b>	<b>3 – Above Expectations</b>
Being respectful in participation	Raises points by frequently interrupting the speaker	Raises points by interrupting the speaker on occasions	Raises points politely and without interrupting the speaker
Demonstrates good preparation for class	Unprepared for class contribution.	Draws on course and reading content for the lesson	Draws on course and reading content for the lesson, connects to previous content, and brings in new content
Contributes to learning	Seldom moves the conversation/discussion to new insights.	Moves the conversation/discussion to new insights by questioning in constructive way.	Moves the conversation/discussion to new insights by questioning in constructive way; expands on suggestions/ideas by others; offers counter opinion.

**Case Analysis Rubric**

<b>Criterion</b>	<b>1 - Below Expectations</b>	<b>2 - As Expected</b>	<b>3 - Above Expectations</b>
Identification of main issues, problems, and requirements	Is unable to articulate the issues, problems and requirements.	Understands what is required and can satisfactorily articulate issues, problems, and requirements.	Understands what is required and can restate and reformulate issues, problems, and requirements concisely and coherently.
Statistical analysis	Is unable to articulate the business question and translate it into statistical questions that results in inappropriate use of statistical tools.	Can formulate the business question(s) into statistical question(s), runs appropriate analyses, selects tools for solving the statistical question that are appropriate.	Accurately translates the business question(s) into statistical question(s), conducts proper analyses; and justifies use of appropriate tool to answer the question(s).
Development of business insights	Interpretation of results are complicated and do not consider the needs or level of statistical expertise of the decision maker. As a result, conclusions, recommendations, and supporting output, tables and charts are not helpful.	Interpretations of results make sense. Conclusions and recommendations are of limited help, output, tables and charts add value to the interpretation or the conclusions.	Interprets the results in a language that the decision maker understands and can use, makes reasonable conclusions and recommendations, notes any limitations of the analysis, and makes appropriate use of output, tables and charts with useful comments as needed.
Communication of business insights	The communication of business insights contains many grammatical errors, making it generally difficult to read and understand.	The communication of business insights is generally clear, with minimal errors and flow of text is easy to follow at times.	The communication of business insights is logical, easy to read, is virtually error-free, and contains few if any reader distractions.  The communication of business insights contains decisions and actions that the team recommends the client take to resolve issues identified.
Appendices	Information contained in the appendices is difficult to understand, and serve as distractions from the points that are being made in the communication of business insights.	Information contained in the appendices is somewhat easy to comprehend, and adequately advance the points that are being made in the communication of business insights.	Information contained in the appendices is easy to understand, is labelled and is clearly linked to the communication of insights, including useful comments as needed. Appendices are used appropriately as a repository of additional and necessary materials.

**Business Analysis Hackathon Rubric**

<b>Criterion</b>	<b>1 - Below Expectations</b>	<b>2 - As Expected</b>	<b>3 - Above Expectations</b>
Identification of main issues, problems, and requirements	Is unable to articulate the client's issues, problems and requirements.	Understands what the client wants and is able to satisfactorily articulate the client's issues, problems and requirements.	Understands what the client wants and is able to concisely and coherently restate the client's issues, problems and requirements.
Quality of statistical analysis	Has trouble articulating client's needs into statistical questions that results in inappropriate use of	Reasonably translates the client's question(s); runs appropriate analyses; selects tools for solving the	Accurately translates the client's question(s) into statistical questions, conducts proper analyses;

Criterion	1 - Below Expectations	2 - As Expected	3 - Above Expectations
	statistical tools.	statistical question that are appropriate.	and justifies use of appropriate tool to answer the question(s).
Development of business insights and actionable recommendations	Interpretation of results are complicated and does not consider the needs or level of statistical expertise of the client. As a result, conclusions, recommendations not helpful.	Interpretations of results make sense. Conclusions are reasonable and some recommendations are actionable.	Interprets results in a language that the client understands and can use, makes insightful conclusions and actionable recommendations, identifies limitations of the analysis. Translates outcomes and recommendations into financial impact.
Communication of business insights	Report contains many distracting mistakes, making it generally difficult to follow. Supporting output, tables and charts are confusing.	Report is generally clear, with minimal errors, flow of text is easy to follow at most times, and output, tables and charts add value to the interpretation or the conclusions.	Report is logical, complete, easy to read, is virtually error-free, and contains few if any reader distractions. Makes excellent use of output, tables and charts as needed.
Appendices: Tables, Figures, Charts, Outputs	Information contained in the appendices is too hard to understand, and serve as distractions from the points that are being made in the report.	Information contained in the appendices is somewhat easy to comprehend, and adequately advance the points that are being made in the report.	Information contained in the appendices is easy to understand, is labelled and is clearly linked to the main report, including useful comments as needed. Appendices are used appropriately as a repository of additional and necessary materials.

### Teamwork & Interpersonal Skills (Peer Evaluation) Rubric

Traits	Performance	
<b>Roles and Responsibility</b> Behaves professionally by upholding responsibility and assuming accountability for self and others in progressing towards the team's goal.	<b>Not Yet</b> Unclear about his/her own role; refuses to take a role in the group; insists to work individually and has limited coordination or communication with others.	<b>Substantially Developed</b> Always fulfils responsibilities; performs his/her role within the group with enthusiasm and demonstrates willingness to work collaboratively.
	<b>Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed</b>	
<b>Communication</b> Identifies appropriate mechanisms to coordinate and	<b>Not Yet</b> Modes of communication are not appropriate, causing confusion and miscommunication among team members.	<b>Substantially Developed</b> Modes of communication are appropriate, and maintain timely communication and correspondence with team members.



correspond with team members.	<b>Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed</b>	
<b><u>Conflict Resolution</u></b> Resolves conflicts using a variety of approaches.	<b>Not Yet</b> Does not recognize conflicts or is unwilling to resolve conflicts.	<b>Substantially Developed</b> Consistently resolves conflicts through facilitating open discussion and compromise.
	<b>Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed</b>	
<b><u>Contributions</u></b> Contributes positive input for the team; effectively utilizes one's knowledge and expertise.	<b>Not Yet</b> Largely disinterested in working in a group and refuses to participate; observes passively or is unwilling to share information with other team members.	<b>Substantially Developed</b> <u>Actively attends and participates in all activities and provides meaningful contribution in articulating ideas and opinions.</u>
	<b>Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed</b>	
<b><u>Relationship</u></b> Maintains cooperative interaction with other team members regardless of individual /cultural differences and respects diverse perspectives.	<b>Not Yet</b> Rarely listens to others and does not acknowledge the opinions that differ from his/her own.	<b>Substantially Developed</b> Engages in respectful relationships with all other members in the team. Embraces and accepts diverse points of view without prejudice.
	<b>Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed</b>	

**References:** *Teamwork Value Rubric - Association of American Colleges and Universities*. Retrieved from [www.aacu.org/value/rubrics/pdf/teamwork.pdf](http://www.aacu.org/value/rubrics/pdf/teamwork.pdf)