

COURSE CONTENT FOR MH5401

Academic Year	AY2023-24	Semester	Semester 1 & 2
Course Coordinator	Tong Ping		
Course Code	MH5401		
Course Title	Real-world E-commerce and DEEP Technology		
Pre-requisites	None		
No of AUs	3		
Category	UE/BDE		
Contact Hours	Total contact hours: 65h spread over 1.5 semesters i.e., if registered for Semester 2: from mid Semester 1 of the same AY to the end of Semester 2 / if registered for Semester 1: from mid Semester 2 of the previous AY to the end of Semester 1. Seminars – 3.5 h Discussions – 7.5 h Project Work – 52 h (equivalent to 26 teaching contact hours) Presentation – 2 h		
Proposal Date	5 September 2023		

Course Aims

This course is one of the Deeper Experiential Engagement Projects (DEEP) series of BDEs and aims to enable you to transform your e-commerce ideas into practical, viable, and successful ventures using essential mathematical and computerized approaches. E-commerce refers to the buying and selling of goods and services on the internet, while also serving as a platform for individuals to share information, insights, and experiences. E-commerce is evolving rapidly alongside modern technology advancements. This course covers a wide range of topics to equip you with the necessary knowledge and skills for engaging in e-commerce activities. It begins by engaging those of you who show genuine interest of e-commerce development through CCA, such as Odyssey, Garage@CrestPion, by addressing topics like online retail, digital marketing, and e-commerce business models. Moreover, this course delves into mathematical techniques, such as statistical analysis, data mining, and optimization strategies, which are essential for effectively analyzing relevant e-commerce data. Furthermore, the course extensively covers computerized approaches essential for building and running an e-commerce business. You will learn website development, e-commerce platforms, payment gateways, cybersecurity measures, and other key elements. As part of your learning journey, you will engage in hands-on projects to create and implement practical solutions for your specific e-commerce ideas. This Experiential Learning project may take place in halls with Residential Education facilities, NTU Clubs and Society spaces, or any appropriate spaces provisioned by the Schools or Institutes for such work. To foster experiential learning, the class will collaborate on a comprehensive project addressing a specific e-commerce idea. Given the complexity of e-commerce projects, even small ones, you will be divided into various groups, with each group focusing on one specific aspect of the project.

Intended Learning Outcomes (ILO)

By the end of the course, you should be able to:

1. Conceptualize and validate e-commerce ideas: You will have the ability to conceptualize e-commerce ideas, evaluate your feasibility, and validate your potential for success in the real-world market.

2. Apply mathematical techniques to e-commerce data: You will be able to utilize mathematical tools, such as statistical analysis, data mining, and optimization strategies, to gain insight from relevant e-commerce data and make data-driven decisions.
3. Utilize computerized approaches for e-commerce solutions: You will have practical knowledge of various computerized techniques, including website development, e-commerce platforms, payment gateways, and cybersecurity measures, enabling them to create and manage an e-commerce business effectively.
4. Implement practical e-commerce solutions: You will have the ability to create and implement practical solutions for their unique e-commerce ideas, turning concepts into actionable plans and projects.
5. Collaborate on e-commerce projects: Through experiential learning projects, you will develop teamwork and communication skills as you work collaboratively on a comprehensive e-commerce project.
6. Apply entrepreneurial mindset: You will be encouraged to cultivate an entrepreneurial mindset, preparing you to tackle challenges and explore opportunities in the e-commerce industry.

Course Content

Upon successfully completing this course, students will know:

1. The concept of e-commerce and its significance in the modern business landscape; E-commerce business models; Online retail and marketplace platforms.
2. Techniques for conducting marketing research to identify target audiences, competitors, and market trends; Methods to assess the feasibility and potential success of e-commerce ideas.
3. Mathematical techniques for e-commerce such as data analysis with statistics, data mining for market insights, optimization strategies
4. Computerized approaches in e-commerce, including website development, e-commerce platforms and payment gateways, cybersecurity measures, and other key elements.
5. Implementation of e-commerce solutions through project planning, hands-on project work, and project presentation in the real world.
6. Entrepreneurial mindset.

The entire class delves in a comprehensive e-commerce venture:

1. Project Inception. Defining the project's purpose, scope, and direction, laying the groundwork for effective project planning and implementation. This is achieved through class discussion.
2. Collaborative Project. Working as a team to address a specific E-commerce idea from conception to implementation.
3. Individual Roles: Each student focusing on one specific aspect of the project, leveraging their expertise and personal interests.

4. Project Showcase. Turning the specific E-commerce idea to a practical, viable and successful venture to solve a small real-world problem.

Upon successfully completing this course, students will also possess the following attitudes, views, or attributes:

1. Gain confidence in relying on their own ideas and logical thinking
2. Appreciate the diversity in ideas, thought processes and approaches exhibited by other team members and the synergy drawn from such diversity
3. Be comfortable with unknowns and failures
4. Realize their own blind spots in observation
5. Become more curious and active in satisfying their curiosity.

Assessment (includes both continuous and summative assessment)

Component	ILO Tested	Weight	Team/Individual	Assessment rubrics
1. Quiz: Relevant competency e.g., knowledge, basic skills (Hard Assessment)	1, 2, 3, 4	10%	Individual	See Appendix Rubric 1
2. Ideation/ project management reflection	2, 5, 6	15%	Individual	See Appendix Rubric 2
3. Project Proposal	1, 2, 3, 4, 6	25%	Team	See Appendix Rubric 3, scaled through Rubric 6
4. Progress Journal	2, 3, 4, 5	15%	Individual	See Appendix Rubric 4
5. Presentation	2, 3, 4, 5, 6	15%	Team	See Appendix Rubric 5, scaled through Rubric 6
6. Final Report	1, 2, 3, 4, 5, 6	20%	Team	See Appendix Rubric 4, scaled through Rubric 6
Total		100%		

This course is Pass/Fail graded.

Formative feedback

You will receive both written and verbal feedback in response to your proposals, as the track coordinator or project advisor will return each proposal individually. You will also receive verbal feedback from the track coordinator or project advisor about your progress journals mid-point in your project which is intended to address your gaps in experimental approaches and methods.

You will receive formative feedback through written responses to your quizzes and verbal feedback through in-class discussion. You will receive summative group feedback on the presentation and report following the conclusion of the course.

Learning and Teaching approach

Approach	How does this approach support you in achieving the learning outcomes?
Project Discovery	The course adopts the “Project Discovery” approach, which focuses on inculcating a culture of proactive individual and collaborative learning. The roles of the project advisors are to facilitate discussion and to guide you to acquire fundamental concepts and theories. You are expected to adopt, adapt and synthesize the acquired concepts and theories into practice.
Experiential Learning	The structures of the submissions scaffold the processes that closes the Experiential Learning Cycle, i.e. complementing hands-on experiences with Reflective Observation and Abstract Conceptualization, which then manifests in the next round of decision-making and Active Experimentation.

Reading and References

1. Heinemann, G. (2023). The new online trade: Business models, business systems and benchmarks in e-commerce. Springer. ISBN-13: 978-3658407568.
2. Laudon, K. C. and Traver, C. G. (2023). E-commerce 2023: Business. Technology. Society. Pearson. ISBN-13: 978-0138043391.
3. Ranjan, A., Sinha, A., and Battewad, R. (2020). JavaScript for modern web development. BPB. ISBN-13: 978-9389328721.

Course Policies and Student Responsibilities*(1) General*

You are expected to actively engage in all course-related activities. This involves showing genuine interest through relevant Co-Curricular Activities (CCAs) like Garage@CrestPion, participating in discussions, attending all seminar classes punctually, and taking all scheduled assignments and quizzes 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. Moreover, you will be responsible for actively participating in hands-on projects and the management of your project.

(2) 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 lecture or cannot participate in project work, you must inform the course instructor via email prior to the start of the class or in a timely manner.

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.

On the use of technological tools (such as Generative AI tools), different courses / assignments have different intended learning outcomes. Students should refer to the specific assignment instructions on their use and requirements and/or consult your instructors on how you can use these tools to help your learning.

Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Course Instructors

Instructor	Office Location	Phone	Email
Tong Ping	SPMS-MAS-04-17	6513 7457	tongping@ntu.edu.sg
Masaru Nagaso	SPMS-MAS-04-09		masaru.nagaso@ntu.edu.sg

Planned Weekly Schedule

Week	Topic	ILO	Readings/ Activities
1 (mid Semester 1 or 2, approx. week 8)	Seminar for hands-on knowledge and skills related to e-commerce by addressing topics like online retail, digital marketing, and e-commerce business models.	1, 6	Seminar 1h In the form of interest based CCA, e.g., Odyssey, Garage@CrestPion.
2	Seminar for hands-on knowledge and skills related to the project, including website	2, 3	Seminar 1 h In the form of interest based CCA,

	development, e-commerce platforms, payment gateways, cybersecurity measures, and other key elements.		e.g., Odyssey, Garage@CrestPion.
3	Discussion: Kick-start the project ideation process; define the project's purpose, scope, and direction; laying the groundwork for effective project planning and implementation.	1, 2, 4, 6	Briefing on thought process of ideation and project planning 1 h Starting from this week and continuing throughout the course, we encourage active participation and engagement from all committed students.
4	Project proposal: Preparation and submission	1, 2, 4, 6	All the students collaborate on a single proposal. (students' own time, communicating online, 4 h)
5	Discussion: Develop a detailed project plan	1, 2, 3, 4, 6	Outlining products and marketing approach, choosing a business name, designing brand identity, complying with legal requirements, and sourcing products. 2 h
6	Teamwork on website development and design: Customizing the website's design, layout, and user experience.	3, 5	Students work in groups to develop a website for the e-commerce project under an expert's instruction. (students' own time, communicating online, 3 h)
Exam for the Semester	None – students focus on other courses	-	-
Vacation	Teamwork on website development and design (continued)	3, 5	Website development (students' own time, communicating online, 9 h)

1 – 6 of next Semester	Teamwork on website development and design (continued)	3, 5	Website development (students' own time, communicating online, 18 h)
4 or 5	Seminar on mathematical techniques, such as statistical analysis, data mining, and optimization strategies, which are essential for effectively analyzing relevant e-commerce data.	1, 2	Hands-on seminar 1.5 h Quiz 0.5 h
6	Discussion: Marketing and pre-launch.	3, 5, 6	Developing a comprehensive marketing strategy 2 h
7 - 12	Testing and Launch	3, 5, 6	Conducting thorough testing of website's functionality, launching a soft opening to identify any last-minute issues, implementing feedback, making final adjustments, planning and executing a strong launch marketing campaign to attract customers. (students' own time, communicating online, 18 h)
11	Discussion: Reflecting on the project and discussing future plans	1, 2, 3, 4, 5, 6	Looking back and looking ahead 1.0 h
12 or 13	Discussion: Project completion and celebration	6	Officially launching the e-commerce business to the public or targeted customers 1.5 h
Exam for the Semester	None – students focus on other courses	-	-
Immediately after exam	Final Presentation	1, 2, 3, 4, 5, 6	Presentation 2 h Report preparation

Appendix

Rubric 1: Quiz

	Categories	High			Moderate				Low		
	Score ranges	10	9	8	7	6	5	4	3	2	1
Competence		Student is able to recall and describe most of the facts and concepts taught			Student is able to recall and describe about half of the facts and concepts taught				Student is unable to recall and describe most of the facts and concepts taught		

Rubric 2: Individual Ideation/Project Management Reflection

	Categories	High			Moderate				Low		
	Score ranges	10	9	8	7	6	5	4	3	2	1
Creativity	Originality	Proposal takes on a unique angle/theme not already done elsewhere			Proposal is a reinvention of something that has been done before				Proposal is a direct copy-and-paste of something that has been done before		
	Multi-disciplinary thinking (including aesthetics)	Proposal clearly incorporates elements of aesthetic thinking, or incorporation of ideas from other fields (e.g., architecture, literature) with a clear vision on how the theme may be satisfactorily addressed through this project -- i.e., not doing it for the sake of doing it			Proposal has some elements of aesthetic and multi-disciplinary thinking. There is some vision on how the theme may be satisfactorily addressed through this project				Proposal lacks elements of aesthetic and multi-disciplinary thinking. There is no clear vision how the theme may be satisfactorily addressed through this project		
Competence	Budgeting	Price points and volume considerations are reasonable (have to plan a bit of excess also)			Price points and volume considerations are somewhat reasonable				Price points and volume considerations are out of touch with reality		
	Feasibility	Sound consideration of infrastructural and logistic limitations of the facilities			Some consideration of infrastructural and logistic limitations of the facilities				Project will be difficult to execute given infrastructural and logistic limitations of the facilities		
	Scientific process	Clearly conveys the scientific techniques/processes underpinning the proposal			Some coverage on the scientific techniques/processes underpinning the proposal				Lacks explanation on the scientific techniques/processes underpinning the proposal		

	Time-management	Clear route map towards project completion	Route map towards project completion is provided but unclear	No route map towards project completion
Civic-mindedness	Waste reduction measures	Measures are reasonably practicable	Measures are practicable but results in some loss of efficiency	Measures will result in great loss in efficiency
	Safety	Appropriate mitigating measures are proposed if dealing with potential hazards (e.g. if a blow-torch is to be used in protocol)	Some consideration of safety issues but insufficient mitigating measures are proposed	No consideration of safety issues at all
Communication	Organization and Grammar	Proper formatting with logical layout No (few) grammatical or spelling errors	Somewhat messy formatting Acceptable levels of grammatical and spelling errors	Very messy formatting (lack of consistence in use of fonts, spacing, margins) Grammatical and spelling errors are rampant

Rubric 3: Team Proposal

	Categories	High			Moderate				Low		
	Score ranges	10	9	8	7	6	5	4	3	2	1
Creativity	Originality and innovation	Proposal takes on a unique angle/theme not already done elsewhere			Proposal is a reinvention of something that has been done before				Proposal is a direct copy-and-paste of something that has been done before		
Competence	Feasibility	Sound consideration of infrastructural and logistic limitations of the facilities			Some consideration of infrastructural and logistic limitations of the facilities				Project will be difficult to execute given infrastructural and logistic limitations of the facilities		
Competence	Application	There is clear technical/scientific/logical thinking that underpins the motivations for the project			There is some evidence of technical/scientific/logical thinking				There is a lack of technical/scientific/logical thinking		
Communication	Clarity and organization	Proper formatting with logical layout No (few) grammatical or spelling errors			Somewhat messy formatting Acceptable levels of grammatical and spelling errors				Very messy formatting (lack of consistence in use of fonts, spacing, margins) Grammatical and spelling errors are rampant		

Rubric 4: Individual Progress Journal and Team Final Report

		Categories	High			Moderate				Low		
		Score ranges	10	9	8	7	6	5	4	3	2	1
Part 1 (30% overall)	Competence (15%)	Logic and execution	There is a clear logical flow of ideas, concepts and presentation of material.			There is limited logical flow of ideas, concepts and presentation of material.				There is no logical flow of ideas, concepts and presentation of material.		
	Communication (15%)	Clarity and organization	Proper formatting with logical layout No (few) grammatical or spelling errors			Somewhat messy formatting Acceptable levels of grammatical and spelling errors				Very messy formatting (lack of consistence in use of fonts, spacing, margins) Grammatical and spelling errors are rampant		
Part 2 (70% overall)	Competence (15%)	Logic and execution	There is clear technical/scientific/logical thinking that underpins the motivations for the project			There is some evidence of technical/scientific/logical thinking				There is a lack of technical/scientific/logical thinking		
	Communication (15%)	Clarity and organization	Proper formatting with logical layout No (few) grammatical or spelling errors			Somewhat messy formatting Acceptable levels of grammatical and spelling errors				Very messy formatting (lack of consistence in use of fonts, spacing, margins) Grammatical and spelling errors are rampant		
	Growth achieved (to cater to diversity of background as the course is GER) (40%)	1	Clear improvement in any 1 of out 4 traits			Some improvement in any 1 of out 4 traits				No improvement		
		2	Clear improvement in any 2 of out 4 traits			Clear improvement in any 2 of out 4 traits				Insufficient improvement (implying a lack of effort)		
		3	Clear improvement in 3 out of 4 traits			Clear improvement in 3 out of 4 traits				Insufficient improvement (implying a lack of effort)		

Rubric 5: Presentation

	Categories	High			Moderate				Low		
	Score ranges	10	9	8	7	6	5	4	3	2	1

Creativity	Originality	Presentation takes on a unique pitch not simply rehashed from earlier submissions and progress journals	Presentation is rehashed from earlier submissions and progress journals but with efforts to provide a fresh perspective	Presentation is a direct rehash from earlier submissions and progress journals with inadequate cuts and abbreviation
Communication	Clarity	Sound consideration of flow and delivery, usage of visual aids etc., highly engaging	Appropriate consideration of flow and delivery, usage of visual aids etc., moderately engaging	Poor consideration of flow and delivery, visual aids used for the sake of using, not at all engaging

Rubric 6: Peer Evaluation

E.g., for a team component that has the assessment parts broken down into content and organization, a scaling factor will be applied based on peer review on contribution:

Contribution to Team (peer review)	Teammates will be asked to rate from scale of 0-5 the level of contribution of this student on the following:	Average of contribution scale multiplied as factor (1= 5+5 on the scale) to total team score	1-0.8	0.79-0.4	<0.39
	Content		contributed to the level expected	contributed only partly	minimal contribution
	Organization		contributed to the level expected	contributed only partly	minimal contribution

Take the case of a team which has received a total score of 15 for this component.

Through peers' review, student A has received an average score of 4.2 and 5.0 for the 2 components rating his contribution.

He gets a score of 9.2, which will be converted to a factor of 0.92 (since a factor of 1 is equivalent to a full score of $5+5 = 10$).

Hence, he will only get $0.92 \times 15 = 13.8$ marks for this component.