

MS4660 FUNDAMENTALS OF INTELLECTUAL PROPERTY IN MATERIALS SCIENCE AND ENGINEERING

Academic Year	2023-2024	Semester	1
Course Coordinator	MSE(UG) Academic Office/IPOS international		
Course Type	MPE/BDE		
Pre-requisites	NIL		
AU	3		
Grading	Letter Grading		
Contact Hours	Lectures: 26 hours Tutorials: 13 hours Total 39 hours		
Proposal Date	24 November 2023		

Course Aims

This course provides you with a working understanding on significant intellectual property (IP) protection regimes in Singapore, covering copyright, patents, registered design, trade marks and trade secrets and the relevant legislation and legal principles.

The central aim of the course is providing students with the ability to identify, differentiate and apply various aspects of these IP regimes in connection with a business's intellectual asset outputs.

Particular emphasis will be placed on the legal issues in relation to creation, protection, and exploitation of these intellectual assets. Within this context, the course explores how analysing IP rights protection laws and their considerations can guide a business's IP strategies, and how a business is able to use such IP considerations to assess the viability of potential courses of action and their plausible business implications.

A note on the legal cases that are highlighted in the study units: these cases are for illustrative purposes in relation to the legal principles discussed; in general students are NOT expected to be able to recall them or use them in presenting arguments for assessment purposes.

Intended Learning Outcomes (ILO)

By the end of this course, student will be able to:

- 1) Differentiate the range of IP regimes and their related legislation and regulations.
- 2) Describe the qualifying criteria for IP protection/grant of IP rights, and duration of protection under the various IP regimes.
- 3) Examine IP assets and determine the most appropriate IP protection regime(s) or strategy for effectiveness.
- 4) Evaluate and determine issues relating to ownership and control of IP rights.
- 5) Analyse and identify potential infringing behaviour/activities, and possible defences against allegations of infringement.

- 6) Recommend appropriate remedies for instances of proven infringement.
- 7) Analyse how the protection afforded by each IP protection regime or strategy can steer a business's IP strategies and objectives.
- 8) Assess potential business applications of various IP rights/assets.
- 9) Assess different considerations for the making of IP contracts and transactions.

Course Content

No	Topic	Hours
1.	Introduction to IP and Societal Justifications for IP Protection	3
2.	Understanding the Singapore IP Ecosystem	3
3.	Copyright Law: Practical Application and Business Considerations	6
4.	Confidential Information: Practical Application and Business Considerations	3
5.	Patent Law: Practical Application and Business Considerations	6
6.	Registered Design Law: Practical Application and Business Considerations	6
7.	Trade Mark Law: Practical Application and Business Considerations	6
8.	Infringement, Defences and Remedies of IP Rights	3
9.	Commercial Transactions of IP Rights: Licensing and Assignments	3
	Total	39

Assessment (Includes both continuous and summative assessment)

Component	Course LO Tested	Related Programme LO or Graduate Attributes	Weighting	Team/ Individual	Assessment rubrics
1. Continuous Assessment (CA) 1: Common Test (Duration: 1 hour; closed book; Answer booklet is required.)	ILO 1 - 5	EAB SLO f	20%	Individual	N.A.
2. Continuous Assessment (CA) 2: Group Assignment (written response and presentation)	ILO 1 - 3, 7 - 9	EAB SLO f and i	20% Team: 15% Individual*: 5%	Team & Individual	Appendix 1
3. Final Examination	ILO 1 - 9	EAB SLO f	60%	Individual	N.A.

(Duration: 2 hours; closed book; Answer booklet is required.)					
Total			100%		

* Individual components can be assessed through the student's performance during the presentation or other forms of *viva voce* (as needed).

Description of Assessment Components

EAB Graduate Attributes ¹	
a)	Engineering Knowledge Apply the knowledge of mathematics, natural science, engineering fundamentals, and an engineering specialisation as specified in WK1 to WK4 respectively to the solution of complex engineering problems.
b)	Problem Analysis Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
c)	Design/Development of Solutions Design solutions for complex engineering problems and design systems, components or processes that meet the specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
d)	Investigation Conduct investigations of complex problems using research-based knowledge (WK8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
e)	Modern Tool Usage Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering problems, with an understanding of the limitations.
f)	The Engineer and Society Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems.
g)	Environment and Sustainability Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.
h)	Ethics Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
i)	Individual and Team Work

¹ Reference: [EAB Accreditation Manual](#)

	Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
j)	Communication Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
k)	Project Management and Finance Demonstrate knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
l)	Life-long Learning Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Formative Feedback

Feedback will be given on a constant basis, in the following contexts:

1. In respect of student responses to hypothetical problem questions attempted during tutorial
2. Review session post CA 1 (common test)
3. In respect of student presentation deliverables for CA 2 (component of group assignment); feedback will be given post-presentation
4. Review session ahead of final written examination, as a class and on an individual basis (voluntary)

Learning & Teaching Approach

Approach	How does this approach support students in achieving the learning outcomes?
Lecture	You will be presented with overviews and key takeaways in the lecture presentations, using standard presentation formats enhanced with online resources to illustrate explanations.
Tutorial	You will be presented with hypothetical fact patterns that you will work through in a guided manner (modified essay question). You will be required to formulate the responses in a group, and present the same to the whole class, and receive feedback as to the accuracy of responses.
Group assignment	Groups will be given one assignment brief containing 2 main deliverables: a) presentation as a group; b) a written report/memorandum

Readings & References

Pre readings:

1. IPOS website

<http://www.ipos.gov.sg>

2. Copyright Infopack (IPOS)
<https://www.ipos.gov.sg/resources/copyright>
 3. Trade Mark Infopack (IPOS)
<https://www.ipos.gov.sg/resources/trade-mark>
 4. Classification of Goods and Services
<https://www.ipos.gov.sg/resources/trade-mark>
- IPA-authored Learner's Guide containing key content (required)

Course Policy & Student Responsibility

As a student of the course, you are required to abide by both the University Code of Conduct and the Student Code of Conduct. The Codes provide information on the responsibilities of all NTU students, as well as examples of misconduct and details about how students can report suspected misconduct. The university also has the Student Mental Health Policy. The Policy states the University's commitment to providing a supportive environment for the holistic development of students, including the improvement of mental health and well-being.

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.

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.

Course Instructors

Instructor	Office Location	Phone	Email
IPOS International	1 Paya Lebar Link #11-03, PLQ 1, Paya Lebar Quarter, Singapore 408533	6330 8660	gradstudies@iposinternational.com

Planned Weekly Schedule

Week	Topic	Course ILO	Readings/Activities
1	Introduction to IP and IP Law	ILO 1, 2	Prescribed Learner's Guide reading; lecture
2	Confidential information (including ideas, trade secrets, and knowhow)	ILO 1, 2, 3, 4, 9	Prescribed Learner's Guide reading; lecture; tutorial involving case study analysis
3	Patent Law Basics	ILO 1, 2, 3, 4, 5	Prescribed Learner's Guide reading; lecture; tutorial involving case study analysis
4	Registered Design Law & Layout Circuit Design Protection Basics	ILO 1, 2, 3, 4, 5	Prescribed Learner's Guide reading; lecture; tutorial involving case study analysis
5	Copyright Law (1)	ILO 1, 2, 3, 4	Prescribed Learner's Guide reading; lecture; tutorial involving case study analysis
6	Trade Mark Law (1)	ILO 1, 2, 3, 4	Prescribed Learner's Guide reading; lecture; tutorial involving case study analysis
7	CA1 (Common test, individual)	ILO 1, 2, 3, 4	Carried out in lecture session
8	Copyright Law (2): Business Strategy	ILO 3, 4, 6, 7, 8, 9	Prescribed Learner's Guide reading; lecture; tutorial involving case study analysis; announce CA2 (Group assignment)
9	Trade Mark Law (2): Business Strategy	ILO 3, 4, 6, 7, 8, 9	Prescribed Learner's Guide reading; lecture;

			tutorial involving case study analysis
10	Copyright & Trade Marks: Infringement, Defences & Enforcement Strategies	ILO 5, 6	Prescribed Learner's Guide reading; lecture; tutorial involving case study analysis
11	Dealing in IP Rights (Licensing)	ILO 4, 7, 8, 9	Workshop (during lecture session), tutorial involving case study analysis
12	CA 2(Group assignment)	ILO 2, 3, 4, 7, 8	Presentations and defence (carried out in lecture session)
13	Examination review	ILO 1 – 9	Lecture (summary of main topics), tutorial consults on individual basis