**Course Coordinator**  
Director - CN Yang Scholars Programme

**Course Code**  
CY1500

**Course Title**  
Introduction to Research

**Pre-requisites**  
None

**No of AUs**  
3

**Contact Hours**  
Total: 39 contact hours  
- Lecture: 18 contact hours  
- Tutorial: 21 contact hours

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**Course Aims**

This course prepares you as a Year 1 CNYScholar for research in the Science & Engineering disciplines. It aims to develop your understanding of the typical research process, which includes conducting literature review, formulating research questions, designing research methodology, writing research proposals and presenting your research ideas. This knowledge is essential for future research modules such as CY1400 undergraduate research experience and CY2001 research attachment.

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**Intended Learning Outcomes (ILO)**

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

1. Formulate a research question after appraising and evaluating scientific literature
2. Develop a research methodology to obtain accurate and repeatable data
3. Write a good quality research proposal such that non-expert readers can understand the significance of the problems addressed
4. Present and defend your research proposal to a general audience such that it is convincing and persuasive enough to obtain funding for your ideas

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**Course Content**

Typical research process
Research ethics
Literature review
Technical writing
Research methodology
Presentation skills

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**Assessment (includes both continuous and summative assessment)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Course LO Tested</th>
<th>Related Programme LO or Graduate Attributes</th>
<th>Weighting</th>
<th>Team/ Individual</th>
<th>Assessment rubrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Proposal</td>
<td>1,2,3</td>
<td>Creativity; competence; communication; civic-mindedness; character</td>
<td>40%</td>
<td>Individual</td>
<td>Appendix 2</td>
</tr>
<tr>
<td>2. Presentation</td>
<td>1,2,4</td>
<td>Creativity; competence; communication; civic-mindedness; character</td>
<td>40%</td>
<td>Individual</td>
<td>Appendix 3</td>
</tr>
<tr>
<td>3. Continuous assessment</td>
<td>1,2,3,4</td>
<td>Creativity; competence; communication; civic-mindedness; character</td>
<td>20%</td>
<td>Individual</td>
<td>Appendix 1</td>
</tr>
</tbody>
</table>

Total 100%

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**Formative feedback**

You will be provided with individual formative feedback on personalized tasks and assignments during your tutorial sessions. The customized attention serves to develop your enthusiasm and independence for doing research. General feedback on your proposal and presentation will also be provided at the end of the course.
Learning and Teaching approach

<table>
<thead>
<tr>
<th>Approach</th>
<th>How does this approach support students in achieving the learning outcomes?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Learning, Research and Inquiry-based Learning</td>
<td>In this course, you are seen as producers instead of simply consumers of knowledge. Group-based interactive activities are extensively incorporated into the lectures, such that you are highly engaged and responsible for your collective learning. Furthermore, you are split into smaller groups of 6-8 during the tutorial sessions, where you are expected to develop your own unique research questions through various tasks and assignments. You are also expected to share your knowledge through intensive group discussions. You are then provided with individual feedback on your work by your tutor as well as your peers. This customized attention serves to develop your enthusiasm and independence for doing research. In this process, you gain a high level responsibility for your work, since the more work you produce, the more feedback you receive and hence the more you learn. In addition, the more knowledge you share among each other, the more your group collectively learns.</td>
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</tbody>
</table>

Reading and References

A literature database comprising journal and review articles will be created for you each year, according to the designated research topic. You are also expected to conduct a literature search of the papers relevant to your newly proposed research question, so as to address the research topic posed to you.

Course Policies and Student Responsibilities

You are expected to attend all lectures and tutorials punctually, and participate in all discussions and activities. You are also expected to complete and submit all assigned pre-class readings and activities by the stipulated deadlines.

Absence from lectures and tutorials without a valid reason will affect your overall course grade. Valid reasons include falling sick supported by a medical certificate. There will be limited make-up opportunities.

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.

Course Instructors

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Office Location</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor Tan Choon Hong</td>
<td>SPMS-CBC-04-18</td>
<td>63168761</td>
<td><a href="mailto:CHOONHONG@NTU.EDU.SG">CHOONHONG@NTU.EDU.SG</a></td>
</tr>
</tbody>
</table>
The 39 contact hours of this course are completed within 10 teaching weeks, so as to allow you to focus on your examinations for other courses. This course does not have final examinations. Below is a timeline which indicates the deadline by which each assessment component should be completed.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Course LO</th>
<th>Readings/ Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to research process Conducting literature review</td>
<td>1,2,3,4</td>
<td>Lecture &amp; tutorial</td>
</tr>
<tr>
<td>2</td>
<td>Developing good research methodology Research Ethics</td>
<td>1,2,3,4</td>
<td>Lecture &amp; tutorial</td>
</tr>
<tr>
<td>3,4</td>
<td>Proposal writing Group discussions</td>
<td>1,2,3</td>
<td>Lecture &amp; tutorial</td>
</tr>
</tbody>
</table>
| 5    | **Written research proposal**  
You will prepare a written document outlining the potential areas of research, a specific research question, a set of research objectives, and then a proposed methodology to address the research question. It should show the assessor that you understand the research involved. | 1,2,3 | Assessment |
| 6,7  | Presentation skills Rehearsals within groups | 1,2,4 | Lecture & tutorial |
| 8,9  | **Presentation**  
You will give a 3-minute presentation on your research proposal. There will also be question and answer session for you to defend your work. The presentation should be convincing and persuasive enough to obtain funding for your ideas. | 1,2,4 | Assessment |
| 10   | **Continuous assessment**  
You will be assessed continuously by lecturer and tutor on all assigned tasks and assignments. It includes the understanding and correct demonstration of the knowledge taught, as well as overall competence and behavior during the course. | 1,2,3,4 | Assessment |