# Bachelor of Engineering (Materials Engineering)

## Year 2 Poly Direct Entry Admission (AY2019-20)

### Academic Unit (AU) Required for Graduation

<table>
<thead>
<tr>
<th>Bachelor of Engineering (Materials Engineering)</th>
<th>Year of Study</th>
<th>Core</th>
<th>Core Electives</th>
<th>GER</th>
<th>Unrestricted Electives</th>
<th>Total AU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>Core Electives</td>
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<tr>
<td></td>
<td>2</td>
<td>35</td>
<td>-</td>
<td>8</td>
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<td>Year 2 Poly Direct Entry Admission</td>
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<td>17</td>
<td>12</td>
<td>3</td>
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<td>All Years</td>
<td>17</td>
<td>12</td>
<td>3</td>
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</tr>
</tbody>
</table>

**Description of Abbreviation**
- BM – Business & Management
- LA – Liberal Arts
- STS – Science, Technology & Society
## YEAR 2 - Poly Direct Entry Admission

<table>
<thead>
<tr>
<th>Course Code and Title</th>
<th>Type</th>
<th>AU</th>
<th>Pre-requisite / Co-Requisite^ / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YEAR 2 SEMESTER 1</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>GC0001 Introduction to Sustainability: Multidisciplinary Approaches and Solutions</td>
<td>GER Core</td>
<td>1</td>
<td>Compulsory online module</td>
</tr>
<tr>
<td></td>
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<td>Must be taken in Y2 S1</td>
</tr>
<tr>
<td>MH1810 Mathematics I*</td>
<td>Core</td>
<td>3</td>
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</tr>
<tr>
<td>MS1015 Materials Science</td>
<td>Core</td>
<td>3</td>
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<tr>
<td>MS1016 Thermodynamics of Materials</td>
<td>Core</td>
<td>3</td>
<td>MS1015^</td>
</tr>
<tr>
<td>MS2012 Introduction to Manufacturing Processes</td>
<td>Core</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MS2013 Polymers and Composites</td>
<td>Core</td>
<td>3</td>
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</tr>
<tr>
<td>MS2015 Mechanical Behaviour of Materials</td>
<td>Core</td>
<td>3</td>
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<tr>
<td>MS2081 Laboratory IIA</td>
<td>Core</td>
<td>1</td>
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</tr>
<tr>
<td>MS8001 Management with Humour</td>
<td>GER Elective (BM)</td>
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<tr>
<td><strong>TOTAL</strong></td>
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</table>

* Students who have obtained Grade 'B+' or above for all Engineering Mathematics diploma modules are eligible for exemption.

<table>
<thead>
<tr>
<th>Course Code and Title</th>
<th>Type</th>
<th>AU</th>
<th>Pre-requisite / Co-Requisite^ / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YEAR 2 SEMESTER 2</strong></td>
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<tr>
<td>HW0188 Engineering Communication I</td>
<td>GER Core</td>
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<td>HW0001^</td>
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<td>HY0001 Ethics and Moral Reasoning</td>
<td>GER Core</td>
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<td>Compulsory online module</td>
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<td>Must be taken in Y2 S2</td>
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<tr>
<td>ML0003 Career Preparatory Course</td>
<td>GER Core</td>
<td>1</td>
<td>Compulsory online module</td>
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<td></td>
<td></td>
<td></td>
<td>Must be taken in Y2 S2</td>
</tr>
<tr>
<td>MS1008 Introduction to Computational thinking</td>
<td>Core</td>
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</tr>
<tr>
<td>MS0003 Introduction to Data Science and Artificial Intelligence</td>
<td>GER Core</td>
<td>3</td>
<td>MS1008</td>
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<tr>
<td>MH2811 Mathematics II</td>
<td>Core</td>
<td>3</td>
<td>MH1810^</td>
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<tr>
<td>MS2014 Materials Structure and Defects</td>
<td>Core</td>
<td>3</td>
<td>MS1015^</td>
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<tr>
<td>MS2016 Phase Transformation and Kinetics</td>
<td>Core</td>
<td>3</td>
<td>MS1016^</td>
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<tr>
<td>MS2018 Electronic &amp; Magnetic Properties of Materials</td>
<td>Core</td>
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<tr>
<td>MS2082 Laboratory IIB</td>
<td>Core</td>
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### YEAR 3 – Poly Direct Entry Admission

<table>
<thead>
<tr>
<th>Course Code and Title</th>
<th>Type</th>
<th>AU</th>
<th>Pre-requisite / Co-Requisite^ / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YEAR 3 SEMESTER 1</strong></td>
<td></td>
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<tr>
<td>ET0001 Enterprise and Innovation</td>
<td>GER Core</td>
<td>1</td>
<td>Compulsory online module</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Must be taken in Y3 S1</td>
</tr>
<tr>
<td>HW0288 Engineering Communication II</td>
<td>GER Core</td>
<td>2</td>
<td>HW0188</td>
</tr>
<tr>
<td>MS3011 Metallic &amp; Ceramic Materials</td>
<td>Core</td>
<td>3</td>
<td>MS2016^</td>
</tr>
<tr>
<td>MS3012 Micro/Nanoelectronic Materials Processing</td>
<td>Core</td>
<td>3</td>
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</tr>
<tr>
<td>MS3013 Environmental Effects on Materials</td>
<td>Core</td>
<td>3</td>
<td>MS2013^, MS3011^</td>
</tr>
<tr>
<td>MS3014 Analysis of Materials</td>
<td>Core</td>
<td>3</td>
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<tr>
<td>MS3015 Materials Aspects in Design</td>
<td>Core</td>
<td>3</td>
<td>MS1015, MS2013^, MS3011^</td>
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<tr>
<td>MS3081 Laboratory III</td>
<td>Core</td>
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<tr>
<td><strong>TOTAL</strong></td>
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</tbody>
</table>

* ET0001 and ML0002 must be taken in S1 regardless of students taking courses in NTU or going for internship

| **YEAR 3 SEMESTER 2**                                     |           |    |                                                                |
| MS3099 Professional Internship                           | Core      | 10 | Year 3 Standing and 4 semesters minimum                       |
| **TOTAL**                                                |           | 10 |                                                                |
### YEAR 4 – Poly Direct Entry Admission

<table>
<thead>
<tr>
<th>Course Code and Title</th>
<th>Type</th>
<th>AU</th>
<th>Pre-requisite / Co-Requisite^ / Remarks</th>
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</thead>
<tbody>
<tr>
<td><strong>YEAR 4 SEMESTER 1</strong></td>
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<tr>
<td>MS4013 Biomaterials</td>
<td>Core</td>
<td>3</td>
<td>MS2013, MS3011^</td>
</tr>
<tr>
<td>MS4014 Nanomaterials: fundamentals and applications</td>
<td>Core</td>
<td>3</td>
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<tr>
<td>MS4089 Final Year Project</td>
<td>Core</td>
<td>4</td>
<td>At least Year 4 Standing</td>
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<tr>
<td>Major Prescribed Elective 1</td>
<td>Core Elective</td>
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<tr>
<td>Major Prescribed Elective 2</td>
<td>Core Elective</td>
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<tr>
<td>UE 1</td>
<td>Unrestricted Elective</td>
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<tr>
<td><strong>TOTAL</strong></td>
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| **YEAR 4 SEMESTER 2** |                     |    |                                        |
| MS0002 Engineers & Society | GER Core          | 3  |                                        |
| MS4012 Quality Control  | Core                | 3  |                                        |
| MS4089 Final Year Project | Core                | 4  | At least Year 4 Standing               |
| Major Prescribed Elective 3 | Core Elective       | 3  |                                        |
| Major Prescribed Elective 4 | Core Elective       | 3  |                                        |
| UE 2                  | Unrestricted Elective | 3  |                                        |
| **TOTAL**             |                     | 19 |                                        |