Welcome to Materials Science & Engineering!

Curriculum Briefing
(For Direct Entry 2nd Year)
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Assistant Chair (Undergraduate)
September 2010
Source: The Academic Unit System Handbook

NTU Home ⇒ Services ⇒ Academic Services

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Academic Unit System (AUS)

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AUS Handbook AY2010-11

http://www.ntu.edu.sg/Services/Academic/undergraduates/Pages/AcademicUnitSystem(AUS).aspx
Academic Calendar

- Academic year - 2 semesters
- Examinations at the end of each semester
- 2 Special Terms during the Semester 2 Vacation (May-Jul period)

http://www.ntu.edu.sg/Services/Academic/undergraduates/Academic%20Calendar/Pages/2010-11.aspx
Academic Units

• A measure of students’ workload associated with a subject

• 1 hr/week lecture or tutorial = 1 AU

• 3 hr/week laboratory = 1 AU

• Industrial Attachment = 10 AUs, Final Year Project = 10 AUs
Courses

• **Core courses**
  - Compulsory courses required to satisfy programme requirements

• **Major Prescribed Electives (PE)**
  - Encountered in the Final Year
  - Choose 5 from a list of technical courses.
General Education Requirement (GER)

- **Core Courses (GER-Core)**
  - MS2030 Human Resource Management & Entrepreneurship (3AUs)
  - MS4030 Engineers & Society (3AUs)
  - 3 Communication Skills (HW110, HW210 and HW310) (9AUs)

- **Prescribed Electives (GER-PE)**
  Broadening courses in:
  - Art, humanities and social sciences [i.e. GER-PE(AHSS)]
  - Business & management [i.e. GER-PE(BM)]
  - Science, technology & society [i.e. GER-PE(STS)]
General Education Requirement (GER)

- **Unrestricted Electives (GER-UE)**
  - Courses chosen to broaden the learning experience
  - Courses offered by Centre for Chinese Language and Culture (CCLC) or other schools
  - Courses from Minors
  - Enrichment Programmes such as GIP and URECA
  - Industrial Attachment (if taking extended IA)
  - Could be taken at any time during the programme

**N.B.** A course once confirmed as a GER-PE shall not be re-classified as an UE, and vice-versa.
Curriculum Structure

- Shows courses recommended for each semester during the programme - **Normal Load**
- Shows the AUs associated with each course
- Shows **Prerequisites**
- Gives the GER-PE & UE requirements

Available in MSE website

[http://www.mse.ntu.edu.sg/CurrentStudents/Undergraduate/Pages/Curriculum.aspx](http://www.mse.ntu.edu.sg/CurrentStudents/Undergraduate/Pages/Curriculum.aspx)
Prerequisites

• Some courses have prerequisites
• Student must obtain at least D grade in the prerequisite course to register
• Sometimes, prerequisite could be taken concurrently. This is shown with @ in the Curriculum Structure
<table>
<thead>
<tr>
<th>Course Code and Title</th>
<th>Normal Hr / Week</th>
<th></th>
<th>No.of AUs</th>
<th>Pre requisite</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEC</td>
<td>TUT</td>
<td>LAB</td>
<td>Total</td>
</tr>
<tr>
<td>MS2002 Introduction to Manufacturing Processes</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MS2005 Mechanics of Materials</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MS2008 Electronic &amp; Magnetic Properties of Materials</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>HW210 Technical Communication</td>
<td>2</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>MS2010 Polymers &amp; Composites</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MS2072 Laboratory IIB</td>
<td></td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>GER (MS8001 Management with Humour)</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td><strong>Courses below are additional subjects for Polytechnic Direct Entry Student</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS2900 Essential Mathematics</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MS2901 Essential Materials Science</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
AUs Requirement for Degree

For BEng degree
Core = 88 AUs
GER-PE = 15 AUs
Major PE = 15 AUs
UE = 9 AUs
IA = 10 AUs
FYP = 10 AUs
**Total AU = 147**

For Direct Entry 2\(^{nd}\) Year
Core = 66 AUs (incl MS2900 & MS2901)
GER-PE = 9 AUs (1 STS : 1 BM : 1 AHSS)
Major PE (4\(^{th}\) Year) = 15 AUs
UE = 3 AUs
IA = 10 AUs
FYP = 10 AUs
**Total AUs = 113**
### AU Requirement for Polytechnic Direct Entry Students Admitted from 2007 Onwards

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of AUs</th>
<th>Unrestricted Electives</th>
<th>To Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>43</td>
<td>3</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>(37 Core + 6 GER-PE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>3</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>(17 Core + 3 GER-PE + 10 IA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>37</td>
<td>3</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>(12 Core + 15 PE + 10 FYP)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Programme Structure

**Normal Path**

1. Year 1 (Sem 1 & Sem 2)
2. Year 2 (Sem 1 & Sem 2)
3. Year 3 (Sem 1 & Sem 2)
4. Final Year (Sem 1 & Sem 2)
5. IA (any Sem)
6. FYP

**Accelerated Path**

1. Year 1 (Sem 1 & Sem 2)
2. Year 2 (Sem 1 & Sem 2)
3. Year 3 (Sem 2) Sem 1 - IA
4. Year 3 (Sem 2) Final Year (Sem 1)
5. FYP
Satisfactory / Unsatisfactory (S/U) Option

- S/U option applies to only GER-PE and UE courses
- An option not to count a GER course to GPA
- “S” grade only if “Course Grade > C”
- Students may exercise the option for up to 9 AUs for 2nd year direct students
- **Once chosen, cannot be changed!**
  - Not applicable to intended minors
- Student must fulfill a minimum of 66 AUs of graded courses in order to be awarded their degree

http://www.ntu.edu.sg/Services/Academic/undergraduates/Course%20Registration/Pages/satisfactoryUnsatisfactory.aspx
Year Classification

• Students are classified as Year 1, Year 2 etc according to the number of AUs earned (excluding AUs earned for UE)

• For direct entry Year 2 students admitted in 2009:
  Year 2 = 0 - 37 AUs
  Year 3 = 38 - 66 AUs
  Year 4 = >67 AUs

http://www.ntu.edu.sg/Services/Academic/undergraduates/Pages/AcademicUnitSystem(AUS).aspx
Registration of Courses

• All students must register their courses through the Registration system “STARS” (STudent Automated Registration System)

• A schedule for registration is prepared for each school by Office of Academic Services (OAS). Schedule will be announced by OAS

• Students must register on their scheduled date. On other days they will not have access to the system.
Registration of Courses

• **Add-Drop period** - ALL have access to STARS. You may make amendments to their registration during this period

<table>
<thead>
<tr>
<th>Year</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Mon, 30 Aug 2010</td>
<td>4.00 PM – 6.45 PM</td>
</tr>
<tr>
<td></td>
<td>Wed, 31 Aug 2010 to Sun, 12 Sep 2010</td>
<td>10.00 AM – 10.00 PM</td>
</tr>
</tbody>
</table>

• More information on course registration are available from OAS website & MSE website:

  http://www.ntu.edu.sg/Services/Academic/undergraduates/Course%20Registration/Pages/default.aspx
  http://www.mse.ntu.edu.sg/CurrentStudents/Undergraduate/Pages/ImportantDateTimeforRegistration.aspx
Academic Load

• **Normal load** is recommended
• Failed students must **Overload**, or must take an extra semester or two to complete the degree
• STARS allows students to overload (up to 6 AUs) automatically
  i.e. Normal Load + 6 AUs
• Third overload requires approval from the School
  (use **Pink** form available from School’s General Office or download from MSE website)
• Further overloads will not be considered
Grades and grade points are assigned as follows:

<table>
<thead>
<tr>
<th>Letter-Grade</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>5.0</td>
</tr>
<tr>
<td>A</td>
<td>5.0</td>
</tr>
<tr>
<td>A-</td>
<td>4.5</td>
</tr>
<tr>
<td>B+</td>
<td>4.0</td>
</tr>
<tr>
<td>B</td>
<td>3.5</td>
</tr>
<tr>
<td>B-</td>
<td>3.0</td>
</tr>
<tr>
<td>C+</td>
<td>2.5</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>D+</td>
<td>1.5</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Year Grade Point Average (YGPA)
- Represents the grade average of all subjects (including failed subjects) attempted by a student in any year.
- The computation of YGPA is as follows:
  \[
  \frac{[\text{Grade Point } \times \text{ AU for Sub1}] + [\text{Grade Point } \times \text{ AU for Sub X}] + \ldots}{[\text{Total AU attempted in a year}]}
  \]

Cumulative Grade Point Average (CGPA)
- Represents the grade average of all subjects (including failed subjects) attempted by a student.
- The computation of CGPA is as follows:
  \[
  \frac{[\text{Grade Point } \times \text{ AU for Sub1}] + [\text{Grade Point } \times \text{ AU for Sub X}] + \ldots}{[\text{Total AU attempted in all the semesters so far}]}
  \]
• Criteria for satisfactory academic standing in any given semester are:
  – Maintaining a minimum CGPA of 2.00
  – Completing at least 75% of the normal AU workload

• A minimum CGPA of 2.0 must be maintained at the end of each semester to qualify for the overloading of subjects.
Academic Warning & Probation

• Students with poor standing will be subjected to the following performance review:

**Academic warning**
– Semester with CGPA<2.00

**Academic Probation**
– 2\(^{nd}\) Consecutive Semester with CGPA<2.00

**Academic Termination:**
– 3\(^{rd}\) Consecutive Semester with CGPA<2.00
## Degree Classification

<table>
<thead>
<tr>
<th>Classes of Honors</th>
<th>Range CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Class *</td>
<td>4.50 – 5.00</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Class Upper</td>
<td>4.00 – 4.49</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Class Lower</td>
<td>3.50 – 3.99</td>
</tr>
<tr>
<td>Third Class</td>
<td>3.00 – 3.49</td>
</tr>
<tr>
<td>Pass</td>
<td>2.00 – 2.99</td>
</tr>
</tbody>
</table>

* Plus at least an “A-” grade for the FYP are required for the award of a 1<sup>st</sup> class Honours degree.
Special Programmes

• **Minor Programmes** (15 AUs)
  http://www.ntu.edu.sg/Services/Academic/undergraduates/Course%20Registration/Pages/MinorProgrammes.aspx

• **International Student Exchange Programme (INSTEP)**
  http://global.ntu.edu.sg/global/instep/Pages/default.aspx

• **Global Immersion Programme (GIP)**
  http://www.ntu.edu.sg/gip/Pages/default.aspx

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**Other Exchange Programmes:**
http://www.ntu.edu.sg/Services/Academic/undergraduates/Pages/LocalE.aspx
# Options for Industrial Attachement

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Period</th>
<th>AUs</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-week IO: Industrial</td>
<td>May / June</td>
<td>4 AUs (make up 6 AUs from UE)</td>
<td>1 assessment + 1 final report</td>
</tr>
<tr>
<td>Orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22-week IA: Industrial</td>
<td>Jan – Jun</td>
<td>10 AUs</td>
<td>2 assessments + 1 final report</td>
</tr>
<tr>
<td>Attachment</td>
<td>Jul – Dec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-week EIA: Enhanced</td>
<td>Nov – Jun</td>
<td>13 AUs (offset 3 AUs for 1 UE)</td>
<td>3 assessments + 1 final report</td>
</tr>
<tr>
<td>Industrial Attachment or IRA:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Research</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Options for Industrial Attachment

Exemption of Attachment

- Poly graduate
- At least 2 years of relevant working experience

To apply, student must submit:

- A letter from employer or ex-employer stating the period of employment and job responsibility
- A report of at least 2000 words on the last 6 months of employment before joining NTU
- Testimonial from employer/ ex-employer (optional)
Options for Industrial Attachment

Exemption of Attachment

- Student are advised to apply as early as possible and not later than the start of Semester 2 of Year 2.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 January</td>
<td>Latest date for application for exemption of attachment</td>
</tr>
<tr>
<td>End February</td>
<td>Result of application</td>
</tr>
<tr>
<td>April</td>
<td>Registration for attachment (for semester 1)</td>
</tr>
</tbody>
</table>

Visit the CAO website for more information:

http://www3.ntu.edu.sg/CAO/opa_sso_links/IA/
Refer to School website for details

http://www.mse.ntu.edu.sg/
Seeking Help & Clarification

• Academic mentors
• School’s Administrators

Chloe Chan S H  Kwan Jin Peng
Seeking Help & Clarification

Chen Zhong  
Asst Chair

Hng Huey Hoon  
HOD, Materials Science

Subodh Mhaisalkar  
Assoc Chair Acad
# Important Dates

<table>
<thead>
<tr>
<th>Events</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class commencement</td>
<td>30 Aug 10</td>
</tr>
<tr>
<td>Add/drop period</td>
<td>30 Aug 10 – 12 Sep 10</td>
</tr>
<tr>
<td><em>Finalize and print out timetable.</em></td>
<td></td>
</tr>
<tr>
<td>Collection of matric card and clickers</td>
<td>30 Aug 10 – 09 Sep 10</td>
</tr>
<tr>
<td>Lab Coat – Order from NIE Co-op (@NIECanteen)</td>
<td></td>
</tr>
<tr>
<td>Lab class commence on 1\textsuperscript{st} week (Friday)</td>
<td>03 Sep 10</td>
</tr>
<tr>
<td>MSE Fusion Day</td>
<td>17 Sep 10</td>
</tr>
<tr>
<td>Classes will be cancelled from 11.30am – 1.30pm</td>
<td></td>
</tr>
<tr>
<td>Union day</td>
<td>15 Sep 10</td>
</tr>
<tr>
<td>Classes will be cancelled from 10.30am to 2.30pm</td>
<td></td>
</tr>
<tr>
<td>Recess week</td>
<td>18 Oct 10 – 22 Oct 10</td>
</tr>
<tr>
<td>Exam</td>
<td>06 Dec 10 – 23 Dec 10</td>
</tr>
<tr>
<td>Events</td>
<td>Date</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Calculator registration</td>
<td>13 - 24 September 2010 at Undergraduate Laboratory, N4-B4-W101 9.00am to 11.30am and 1.30pm to 4.30pm</td>
</tr>
<tr>
<td>Medical Leave</td>
<td>submit &lt;7 days for lab, quiz etc <a href="http://www.mse.ntu.edu.sg/CurrentStudents/Undergraduate/Pages/FAQ.aspx">http://www.mse.ntu.edu.sg/CurrentStudents/Undergraduate/Pages/FAQ.aspx</a> (submit &lt;2 working days for exams) <a href="http://www.ntu.edu.sg/Services/Academic/undergraduates/Examination/Pages/Instructionstoexamcand.aspx">http://www.ntu.edu.sg/Services/Academic/undergraduates/Examination/Pages/Instructionstoexamcand.aspx</a></td>
</tr>
<tr>
<td>Lab Manuals</td>
<td>Please login using your NTU email username and password at <a href="https://edventure.ntu.edu.sg/">https://edventure.ntu.edu.sg/</a></td>
</tr>
<tr>
<td>Queries on academic matters Email</td>
<td><a href="mailto:mseacad@ntu.edu.sg">mseacad@ntu.edu.sg</a></td>
</tr>
</tbody>
</table>

CHECK YOUR NTU EMAIL ACCOUNT REGULARLY
Have a pleasant stay in NTU

Available in MSE website
(under Curriculum Briefing – for 2nd Year Direct Entry Batch 2010)

http://www.mse.ntu.edu.sg/CurrentStudents/Undergraduate/Pages/Briefing.aspx
Questions???