

Science

# Bachelor of Materials Science and Engineering (Honours) / Biomedical Engineering (3133) -

## Handbook

2023 Commencing Students  
Program Structure



|                   |                                 |                      |                     |                         |
|-------------------|---------------------------------|----------------------|---------------------|-------------------------|
| PROGRAM STRUCTURE | Compulsory Core Courses         | 126 UOC (21 courses) | 168 UOC<br>(28 UOC) | 240 UOC<br>(40 courses) |
|                   | First Year Engineering Elective | 6 UOC (1 course)     |                     |                         |
|                   | Specialisation Requirements     | 36 UOC (6 courses)   | 72 UOC              |                         |
|                   | Biomedical Engineering          | 72 UOC (12 courses)  |                     |                         |

**Compulsory Core Courses & First Year Engineering Electives** are courses taken from the Materials Science component of the degree as defined [here](#).

**Specialisation Requirements** are courses taken from the Material Science component. Students can choose from [Physical Metallurgy](#), [Functional Materials](#), [Process Metallurgy](#), [Materials Engineering](#), and [Ceramic Engineering](#).

**Biomedical Engineering** are courses taken from the Biomedical Engineering component of the degree as defined [here](#).

Science

# Bachelor of Materials Science and Engineering (Honours) / Biomedical Engineering (3133)

2023 Commencing Students  
Program Structure



| Specialisation Requirements  | Page              |
|------------------------------|-------------------|
| <b>Physical Metallurgy</b>   | <a href="#">3</a> |
| <b>Functional Materials</b>  | <a href="#">4</a> |
| <b>Process Metallurgy</b>    | <a href="#">5</a> |
| <b>Materials Engineering</b> | <a href="#">6</a> |
| <b>Ceramic Engineering</b>   | <a href="#">7</a> |

# Bachelor of Materials Science and Engineering (Honours) / Biomedical Engineering (3133)

Term 1 2023 Commencing Students – [Physical Metallurgy \(MATSE1\)](#)

Choose from available proposed courses in each year

| Year 1   |   |   |
|--|---|---|
| <b>MATS1192</b><br>(T1, T3)                                | <b>MATH1131</b><br>(T1, T2, T3) OR<br><b>MATH1141</b><br>(T1, T2, T3) | <b>DESN1000</b><br>(T1, T3)   |
| <b>CHEM1811</b><br>(T1)                                    | <b>PHYS1121</b><br>(T1, T2, T3) OR<br><b>PHYS1131</b><br>(T1, T2, T3) | <b>MATH1231</b><br>(T1, T2, T3) OR<br><b>MATH1241</b><br>(T1, T2, T3) |
| <b>ENGG1811</b><br>(T1, T2, T3) OR<br><b>COMP1911</b> (T2) | 6 UOC First Year<br>Engineering<br>Elective (see Note 1)              |   |

| Year 2                  |                         |                         |
|-------------------------|-------------------------|-------------------------|
| <b>MATS2001</b><br>(T1) | <b>MATS2004</b><br>(T2) | <b>MATS2006</b><br>(T3) |
| <b>MATS2003</b><br>(T1) | <b>MATS2005</b><br>(T2) | <b>MATS2007</b><br>(T3) |
| <b>MATH2019</b><br>(T1) | <b>MATS2008</b><br>(T2) |                         |

| Year 3                      |                         |  |
|-----------------------------|-------------------------|--|
| <b>MATS3001</b><br>(T1)     | <b>MATS3004</b><br>(T2) | 6 UOC Physical<br>Metallurgy<br>Professional<br>Elective<br>(See Note 3) |
| <b>MATS3002</b><br>(T1)     | <b>MATS3006</b><br>(T2) | <b>ANAT2511</b><br>(T3)  |
| <b>MATH2089</b><br>(T1, T3) | <b>BIOM9420</b><br>(T2) |  |

| Year 4                                  |  |   |
|---|--|---|
| <b>BIOM4951</b><br>= 4 UOC (T1, T2, T3) | <b>BIOM4952</b><br>= 4 UOC (Summer,<br>T1, T2, T3) | <b>BIOM4953</b><br>= 4 UOC (Summer,<br>T1, T2, T3)            |
| <b>MATS3005</b><br>(T1)                 | <b>MATS4001</b><br>(T2)                            | 6 UOC Physical<br>Metallurgy Prof<br>Elective<br>(See Note 3) |
| <b>PHSL2121</b><br>T1)                  | <b>MATS3007</b><br>(T2)                            | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)                    |

| Year 5                                     |  |  |
|--|--|--|
| <b>BIOM9410</b><br>(T1)                    | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | <b>ENGG4999</b><br>(See Note 4)            |

|   |  |
|---|--|
| <b>NOTES</b>  | This is intended as a guide only. Courses do not need to be studied in the exact structure that they appear here.  |
|   | See Program Structure on page 1 for a guide on the terminology and colour codes used in this progression plan.   |
|   | <b>Note 1:</b> First Year Engineering Elective: BABS1201 (T1, T3), BIOM1010 (T2), BIOS1301 (T1), CEIC1000 (T3), CVEN1701 (T3), ELEC1111 (Summer, T1, T3), ENGG1400 (T2), GMAT1110 (T2), MATH1081 (T1, T2, T3), MATS1101 (T3), MINE1010 (T1, T3), PHYS1231 (T1, T3), PSYC1001 (T1, T2), SOLA1070 (T2), CHEM1021 or CHEM1041, DESN1300, GEOS1111 or GEOS3321, MMAN1300 (N/A), CEIC1001 (N/A), COMP1921 (N/A), PTRL1010 (N/A) |
|   | <b>Note 2:</b> BIOM9XXX Electives see <a href="#">Handbook</a>   |
| <b>Note 3:</b> Major Specialisation Elective = MATS3003 (T1), MATS4002 (T2), MATS4003 (N/A), MATS4004 (T2), MATS4005 (T3), MATS4006 (T3), MATS4007 (T3) |  |
| <b>Note 4:</b> Students must also complete 60 days of approved industrial training throughout their degree. Click <a href="#">HERE</a> for more info.   |  |

# Bachelor of Materials Science and Engineering (Honours) / Biomedical Engineering (3133)

Term 1 2023 Commencing Students – [Functional Materials \(MATSF1\)](#)

Choose from available proposed courses in each year

| Year 1                                       |  |   |
|--|--|---|
| MATS1192<br>(T1, T3)                         | MATH1131<br>(T1, T2, T3) OR<br>MATH1141<br>(T1, T2, T3)  | DESN1000<br>(T1, T3)                                    |
| CHEM1811<br>(T1)                             | PHYS1121<br>(T1, T2, T3) OR<br>PHYS1131<br>(T1, T2, T3)  | MATH1231<br>(T1, T2, T3) OR<br>MATH1241<br>(T1, T2, T3) |
| ENGG1811<br>(T1, T2, T3) OR<br>COMP1911 (T2) | 6 UOC First Year<br>Engineering<br>Elective (see Note 1) |   |

| Year 2           |                  |                  |
|------------------|------------------|------------------|
| MATS2001<br>(T1) | MATS2004<br>(T2) | MATS2006<br>(T3) |
| MATS2003<br>(T1) | MATS2005<br>(T2) | MATS2007<br>(T3) |
| MATH2019<br>(T1) | MATS2008<br>(T2) |                  |

| Year 3               |                  |                            |
|----------------------|------------------|----------------------------|
| MATS3001<br>(T1)     | MATS3004<br>(T2) | ANAT2511<br>(T3)           |
| MATS3002<br>(T1)     | MATS3006<br>(T2) | 6 UOC BIOM9xxx<br>Elective |
| MATH2089<br>(T1, T3) | BIOM9420<br>(T2) |                            |

| Year 4                           |  |   |
|----------------------------------|--|---|
| BIOM4951<br>= 4 UOC (T1, T2, T3) | BIOM4952<br>= 4 UOC (Summer,<br>T1, T2, T3)                    | BIOM4953<br>= 4 UOC (Summer,<br>T1, T2, T3) |
| MATS3005<br>(T1)                 | 6 UOC Functional<br>Materials Prof<br>Elective<br>(See Note 3) | MATS4005<br>(T3)                            |
| PHSL2121<br>(T1)                 | MATS3007<br>(T2)   | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)  |

| Year 5   |  |  |
|--|--|--|
| BIOM9410<br>(T1)   | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC Functional<br>Materials Prof<br>Elective<br>(See Note 3) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)                     | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | ENGG4999<br>(See Note 4)                   |

|              |   |
|--------------|---|
| <b>NOTES</b> | This is intended as a guide only. Courses do not need to be studied in the exact structure that they appear here.   |
|              | See Program Structure on page 1 for a guide on the terminology and colour codes used in this progression plan.  |
|              | <p>Note 1: First Year Engineering Elective: BABS1201 (T1, T3), BIOM1010 (T2), BIOS1301 (T1), CEIC1000 (T3), CVEN1701 (T3), ELEC1111 (Summer, T1, T3), ENGG1400 (T2), GMAT1110 (T2), MATH1081 (T1, T2, T3), MATS1101 (T3), MINE1010 (T1, T3), PHYS1231 (T1, T3), PSYC1001 (T1, T2), SOLA1070 (T2), CHEM1021 or CHEM1041, DESN1300, GEOS1111 or GEOS3321, MMAN1300 (N/A), CEIC1001 (N/A), COMP1921 (N/A), PTRL1010 (N/A)</p> <p>Note 2: BIOM9XXX Electives see <a href="#">Handbook</a></p> <p>Note 3: Major Specialisation Elective = MATS3003 (T1), MATS4001 (T2), MATS4002 (T2), MATS4003 (N/A), MATS4004 (T2), MATS4006 (T3), MATS4007 (T3)</p> <p>Note 4: Students must also complete 60 days of approved industrial training throughout their degree. Click <a href="#">HERE</a> for more info.</p> |
|              |   |

# Bachelor of Materials Science and Engineering (Honours) / Biomedical Engineering (3133)



Term 1 2023 Commencing Students – [Process Metallurgy \(MATSG1\)](#)

Choose from available proposed courses in each year

| Year 1                                       |  |   |
|--|--|---|
| MATS1192<br>(T1, T3)                         | MATH1131<br>(T1, T2, T3) OR<br>MATH1141<br>(T1, T2, T3)  | DESN1000<br>(T1, T3)                                    |
| CHEM1811<br>(T1)                             | PHYS1121<br>(T1, T2, T3) OR<br>PHYS1131<br>(T1, T2, T3)  | MATH1231<br>(T1, T2, T3) OR<br>MATH1241<br>(T1, T2, T3) |
| ENGG1811<br>(T1, T2, T3) OR<br>COMP1911 (T2) | 6 UOC First Year<br>Engineering<br>Elective (see Note 1) |   |

| Year 2           |                  |                  |
|------------------|------------------|------------------|
| MATS2001<br>(T1) | MATS2004<br>(T2) | MATS2006<br>(T3) |
| MATS2003<br>(T1) | MATS2005<br>(T2) | MATS2007<br>(T3) |
| MATH2019<br>(T1) | MATS2008<br>(T2) |                  |

| Year 3               |                  |  |
|----------------------|------------------|--|
| MATS3001<br>(T1)     | MATS3004<br>(T2) | ANAT2511<br>(T3)                           |
| MATS3002<br>(T1)     | MATS3006<br>(T2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| MATH2089<br>(T1, T3) | BIOM9420<br>(T2) |  |

| Year 4                           |   |  |
|----------------------------------|---|--|
| BIOM4951<br>= 4 UOC (T1, T2, T3) | BIOM4952<br>= 4 UOC (Summer,<br>T1, T2, T3)               | BIOM4953<br>= 4 UOC (Summer,<br>T1, T2, T3)                  |
| MATS3003<br>(T1)                 | MATS4003<br>(Replace with<br>Metallurgy Prof<br>Elective) | 6 UOC Process<br>Metallurgy Prof<br>Elective<br>(See Note 3) |
| PHSL2121<br>(T1)                 | MATS3007<br>(T2)  | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)                   |

| Year 5   |  |  |
|--|--|--|
| BIOM9410<br>(T1)   | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC Process<br>Metallurgy Prof<br>Elective<br>(See Note 3) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)                   | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | ENGG4999<br>(See Note 4)                   |

|   |   |
|---|---|
| <b>NOTES</b>  | This is intended as a guide only. Courses do not need to be studied in the exact structure that they appear here.   |
|   | See Program Structure on page 1 for a guide on the terminology and colour codes used in this progression plan.  |
|   | Note 1: First Year Engineering Elective: BABS1201 (T1, T3), BIOM1010 (T2), BIOS1301 (T1), CEIC1000 (T3), CVEN1701 (T3), ELEC1111 (Summer, T1, T3), ENGG1400 (T2), GMAT1110 (T2), MATH1081 (T1, T2, T3), MATS1101 (T3), MINE1010 (T1, T3), PHYS1231 (T1, T3), PSYC1001 (T1, T2), SOLA1070 (T2), CHEM1021 or CHEM1041, DESN1300, GEOS1111 or GEOS3321, MMAN1300 (N/A), CEIC1001 (N/A), COMP1921 (N/A), PTRL1010 (N/A) |
|   | Note 2: BIOM9XXX Electives see <a href="#">Handbook</a>   |
| Note 3: Major Specialisation Elective = MATS3005 (T1), MATS4001 (T2), MATS4002 (T2), MATS4004 (T2), MATS4005 (T3), MATS4006 (T3), MATS4007 (T3) |   |
| Note 4: Students must also complete 60 days of approved industrial training throughout their degree. Click <a href="#">HERE</a> for more info.  |   |



# Bachelor of Materials Science and Engineering (Honours) / Biomedical Engineering (3133)



Term 1 2023 Commencing Students – [Materials Engineering \(MATSH1\)](#)

Choose from available proposed courses in each year

| Year 1                                       |  |   |
|--|--|---|
| MATS1192<br>(T1, T3)                         | MATH1131<br>(T1, T2, T3) OR<br>MATH1141<br>(T1, T2, T3)  | DESN1000<br>(T1, T3)                                    |
| CHEM1811<br>(T1)                             | PHYS1121<br>(T1, T2, T3) OR<br>PHYS1131<br>(T1, T2, T3)  | MATH1231<br>(T1, T2, T3) OR<br>MATH1241<br>(T1, T2, T3) |
| ENGG1811<br>(T1, T2, T3) OR<br>COMP1911 (T2) | 6 UOC First Year<br>Engineering<br>Elective (see Note 1) |   |

| Year 2           |                  |                  |
|------------------|------------------|------------------|
| MATS2001<br>(T1) | MATS2004<br>(T2) | MATS2006<br>(T3) |
| MATS2003<br>(T1) | MATS2005<br>(T2) | MATS2007<br>(T3) |
| MATH2019<br>(T1) | MATS2008<br>(T2) |                  |

| Year 3               |                  |  |
|----------------------|------------------|--|
| MATS3001<br>(T1)     | MATS3004<br>(T2) | ANAT2511<br>(T3)                           |
| MATS3002<br>(T1)     | MATS3006<br>(T2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| MATH2089<br>(T1, T3) | BIOM9420<br>(T2) |  |

| Year 4   |  |  |
|--|--|--|
| BIOM4951<br>= 4 UOC (T1, T2, T3)                     | BIOM4952<br>= 4 UOC (Summer,<br>T1, T2, T3)          | BIOM4953<br>= 4 UOC (Summer,<br>T1, T2, T3)          |
| 6 UOC Materials<br>Eng Prof Elective<br>(See Note 3) | 6 UOC Materials<br>Eng Prof Elective<br>(See Note 3) | 6 UOC Materials<br>Eng Prof Elective<br>(See Note 3) |
| PHSL2121<br>(T1)                                     | MATS3007<br>(T2)                                     | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)           |

| Year 5   |  |  |
|--|--|--|
| BIOM9410<br>(T1)                                     | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC Materials<br>Eng Prof Elective<br>(See Note 3) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)           | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | ENGG4999<br>(See Note 4)                   |

|  |   |
|--|---|
| <b>NOTES</b>   | This is intended as a guide only. Courses do not need to be studied in the exact structure that they appear here.   |
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|  | Note 1: First Year Engineering Elective: BABS1201 (T1, T3), BIOM1010 (T2), BIOS1301 (T1), CEIC1000 (T3), CVEN1701 (T3), ELEC1111 (Summer, T1, T3), ENGG1400 (T2), GMAT1110 (T2), MATH1081 (T1, T2, T3), MATS1101 (T3), MINE1010 (T1, T3), PHYS1231 (T1, T3), PSYC1001 (T1, T2), SOLA1070 (T2), CHEM1021 or CHEM1041, DESN1300, GEOS1111 or GEOS3321, MMAN1300 (N/A), CEIC1001 (N/A), COMP1921 (N/A), PTRL1010 (N/A) |
|  | Note 2: BIOM9XXX Electives see <a href="#">Handbook</a>   |
| Note 3: Major Specialisation Elective = MATS3003 (T1), MATS3005 (T1), MATS4001 (T2), MATS4002 (T2), MATS4003 (N/A), MATS4004 (T2), MATS4005 (T3), MATS4006 (T3), MATS4007 (T3) |   |
| Note 4: Students must also complete 60 days of approved industrial training throughout their degree. Click <a href="#">HERE</a> for more info.                                 |   |

# Bachelor of Materials Science and Engineering (Honours) / Biomedical Engineering (3133)



Term 1 2023 Commencing Students – [Ceramic Engineering \(MATSJ1\)](#)

Choose from available proposed courses in each year

| Year 1                                       |  |   |
|--|--|---|
| MATS1192<br>(T1, T3)                         | MATH1131<br>(T1, T2, T3) OR<br>MATH1141<br>(T1, T2, T3)  | DESN1000<br>(T1, T3)                                    |
| CHEM1811<br>(T1)                             | PHYS1121<br>(T1, T2, T3) OR<br>PHYS1131<br>(T1, T2, T3)  | MATH1231<br>(T1, T2, T3) OR<br>MATH1241<br>(T1, T2, T3) |
| ENGG1811<br>(T1, T2, T3) OR<br>COMP1911 (T2) | 6 UOC First Year<br>Engineering<br>Elective (see Note 1) |   |

| Year 2           |                  |                  |
|------------------|------------------|------------------|
| MATS2001<br>(T1) | MATS2004<br>(T2) | MATS2006<br>(T3) |
| MATS2003<br>(T1) | MATS2005<br>(T2) | MATS2007<br>(T3) |
| MATH2019<br>(T1) | MATS2008<br>(T2) |                  |

| Year 3               |                  |  |
|----------------------|------------------|--|
| MATS3001<br>(T1)     | MATS3004<br>(T2) | ANAT2511<br>(T3)                           |
| MATS3002<br>(T1)     | MATS3006<br>(T2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| MATH2089<br>(T1, T3) | BIOM9420<br>(T2) |  |

| Year 4                           |   |  |
|----------------------------------|---|--|
| BIOM4951<br>= 4 UOC (T1, T2, T3) | BIOM4952<br>= 4 UOC (Summer,<br>T1, T2, T3) | BIOM4953<br>= 4 UOC (Summer,<br>T1, T2, T3)        |
| MATS4002<br>(T1)                 | MATS4004<br>(T2)                            | 6 UOC Ceramic Eng<br>Prof Elective<br>(See Note 3) |
| PHSL2121<br>(T1)                 | MATS3007<br>(T2)                            | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)         |

| Year 5   |  |  |
|--|--|--|
| BIOM9410<br>(T1)                                   | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC Ceramic Eng<br>Prof Elective<br>(See Note 3) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) |
| 6 UOC BIOM9XXX<br>Elective<br>(See Note 2)         | 6 UOC BIOM9XXX<br>Elective<br>(See Note 2) | ENGG4999<br>(See Note 4)                   |

|  |   |
|--|---|
| <b>NOTES</b>   | This is intended as a guide only. Courses do not need to be studied in the exact structure that they appear here.   |
|  | See Program Structure on page 1 for a guide on the terminology and colour codes used in this progression plan.  |
|  | Note 1: First Year Engineering Elective: BABS1201 (T1, T3), BIOM1010 (T2), BIOS1301 (T1), CEIC1000 (T3), CVEN1701 (T3), ELEC1111 (Summer, T1, T3), ENGG1400 (T2), GMAT1110 (T2), MATH1081 (T1, T2, T3), MATS1101 (T3), MINE1010 (T1, T3), PHYS1231 (T1, T3), PSYC1001 (T1, T2), SOLA1070 (T2), CHEM1021 or CHEM1041, DESN1300, GEOS1111 or GEOS3321, MMAN1300 (N/A), CEIC1001 (N/A), COMP1921 (N/A), PTRL1010 (N/A) |
|  | Note 2: BIOM9XXX Electives see <a href="#">Handbook</a>   |
| Note 3: Major Specialisation Elective = MATS3003 (T1), MATS3005 (T1), MATS4001 (T2), MATS4003 (N/A), MATS4005 (T3), MATS4006 (T3), MATS4007 (T3) |   |
| Note 4: Students must also complete 60 days of approved industrial training throughout their degree. Click <a href="#">HERE</a> for more info.   |   |