

## Content

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| <b>Biomedical Engineering – RMT</b> |       |
|-------------------------------------|-------|
| Core                                | 15 ec |
| Specialization elective TU/e        | 5 ec  |
| Specialization elective UU          | 5 ec  |
| Free space TU/e or UU *             | 15 ec |
|                                     |       |
| Externship                          | 20 ec |
| Graduation project                  | 60 ec |

\* You are strongly advised to choose specialization electives

# Master electives list Biomedical Engineering

(2024-2025)

Regenerative Medicine and Technology track

## Core course

| Code  | Course name         | Lecturer      | Q/TS | EC |
|-------|---------------------|---------------|------|----|
| 8R000 | Introduction to RMT | Dias Castilho | 1/HW | 15 |

**HW** = Lectures and project all days

## Specialization electives

### Specialization electives given by BME faculty

| Code   | Course name  | Lecturer       | Q/TS             | EC  |
|--------|--|----------------|------------------|-----|
| 8MM40  | Cell mechanobiology and engineering  | Kurniawan      | 1/A              | 5   |
| 8CM10  | Radiation physics  | Raaijmakers    | 1/A <b>a)</b>    | 2.5 |
| 8DM50  | Machine learning in Medical Imaging and Biology                            | Veta           | 1/B              | 5   |
| 8VM00  | Cardiovascular fluid mechanics   | Van de Vosse   | 1/B              | 5   |
| 8SM00  | Clinical chemistry   | Scharnhorst    | 1/B1             | 2.5 |
| 8SM50  | Chemical Biology   | Cossar         | 1/D              | 5   |
| 8CM20  | Molecular modelling  | Markvoort      | 2/A              | 5   |
| 8MM50  | Host response to biomaterials  | Smits          | 2/B              | 5   |
| 8NM00* | Radioisotopes and ionizing radiation in biochemical technology <b>CFK)</b> | Moerdijk       | 2/B              | 2.5 |
| 8MM30  | Numerical analysis of continua II  | Loerakker      | 2/C              | 5   |
| 5LPE0  | Electromagnetic field in MRI   | Raaijmakers    | 2/C1             | 5   |
| 8SM10  | Protein engineering  | Merkx          | 2/D              | 2.5 |
| 8TM10  | Orthopaedic soft tissues: biomechanics and mechanobiology                  | Ito            | 2/D              | 5   |
| 8VM60  | Ultrasound in the (bio)medical engineering                                 | Lopata         | 2/D              | 5   |
| 8VM70+ | Advanced topics in Ultrasound imaging                                      | Lopata         | 2/D              | 2.5 |
| 3MN170 | Molecular biosensing   | De Jong        | 2/E              | 5   |
| 8VM30  | Vascular mechanics   | Rutten         | 2/E              | 5   |
| 8DM20  | Capita selecta medical image analysis                                      | Pluim          | 3/A+B1 <b>b)</b> | 5   |
| 8TM00  | Bone structure and function  | Van Rietbergen | 3/B              | 5   |
| 8VM80  | Pathophysiology of the cardiovascular system                               | Van Sambeek    | 3/B              | 5   |
| 8SM30  | Capita selecta laboratory medicine   | Scharnhorst    | 3/B1             | 2.5 |
| 8CM00  | Systems medicine   | O'Donovan      | 3/B2             | 5   |
| 8SM20  | Biomaterials   | Dankers        | 3/C              | 5   |
| 8VM20  | Cardiac function   | Bovendeerd     | 3/D              | 5   |
| 6EMA61 | Advances in molecular chemistry  | Palmans        | 3/E              | 5   |
| 8SM40* | Nanomedicine   | Van der Meel   | 4/A              | 5   |
| 3MN210 | Single molecule microscopy of nano materials                               | De Jong        | 4/C              | 5   |
| 8NM20  | Optical microscopy**   | Albertazzi     | 4/C              | 5   |
| 8VM40  | Cardiovascular fluid-structure interaction                                 | Van de Vosse   | 4/D              | 5   |
| 8CM30  | Applied clinical data science  | Van Riel       | 4/E              | 2.5 |

\* = Limited number of spots

**CFK)** = 8NM00 students in the "Fysica in de kliniek" certificate fill the first spots

+ = If you already did 8VC00

\*\* = 8NM20 **or** 3MN210 (not both)

**a)** = Only on Monday

**b)** = Lectures on Monday only and BZ on Monday afternoon

**Q** = Quarter    **TS** = Time slot    **EC** = Credit points based on → European Credit Transfer System (ECTS)

# Master electives list Biomedical Engineering

(2024-2025)

Regenerative Medicine and Technology track

## Specialization electives in the lab

| Code   | Course name  | Lecturer | Q/TS  | EC |
|--------|--|----------|-------|----|
| 8PM00* | Project Molecular biology**                                    | Merkx    | 1/\$  | 5  |
| 8MM20* | Cell biological techniques and cell-biomaterial interactions** | De Boer  | 2/\$  | 5  |
| 8PM01* | Project Organic chemistry                                      | Meijer   | 4/C+E | 5  |

\* = Limited number of spots

\*\* = 8MM20 **or** 8PM00 (not both)

\$ = Individually planned by lecturer

## Specialization electives Utrecht University

<https://osiris-student.uu.nl/#/onderwijscatalogus/extern/cursus?taal=en>

For example:

| Code  | Course name                          | EC  |
|-------|--------------------------------------|-----|
| 8UU05 | Essentials of neuroscience           | 3   |
| 8UU06 | Fundamentals of biofabrication       | 3   |
| 8UU07 | Cardiovascular immunology            | 3   |
| 8UU08 | Vascularized tissue engineering      | 3   |
| 8UU09 | Cardiac regenerative medicine        | 3   |
| 8UU10 | Environmental epidemiology           | 3   |
| 8UU11 | Metabolic pathways                   | 3   |
| 8UU12 | Philosophy of neuroscience           | 5   |
| 8UU13 | Introduction to epidemiology         | 1.5 |
| 8UU14 | Introduction to stem cells           | 3   |
| 8UU15 | Computational immunology             | 3   |
| 8UU16 | Thrombosis and haemostasis           | 3   |
| 8UU17 | Signalling and Techniques in I&I     | 4.5 |
| 8UU19 | Biomolecular and cellular cardiology | 3   |
| 8UU20 | Infectious diseases and one health   | 3   |
| 8UU25 | Vaccines                             | 3   |
| 8UU26 | Genes to organisms                   | 3   |

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**Suggestions for free space**

You are strongly advised to choose specialization electives (see pages 2+3)

**Master level**

| Code  | Course name        | Lecturer      | Dep |     | EC  |
|-------|--------------------|---------------|-----|-----|-----|
| 8GM10 | BiTT project       | Van Donkelaar | BME | 3+4 | 2.5 |
| 8GM15 | BiTT project       | Van Donkelaar | BME | 3+4 | 5   |
| 8GM00 | Career development | Pril          | BME | all | 2.5 |

**Bachelor level**

Maximum 15 EC bachelor level 3 courses; check Osiris if they are taught in English or Dutch

| Code   | Course name                             | Lecturer       | Q/TS | EC |
|--------|---|----------------|------|----|
| 8RC00  | Pharmacology                            | Brunsveld      | 1/A  | 5  |
| 8TB10  | Structure and function of joints        | Ito            | 1/A  | 5  |
| 2DBM90 | Applied biostatistical modelling        | Morris         | 2/A  | 5  |
| 8BM030 | BOC – Bio-organic chemistry             | Dankers        | 2/D  | 5  |
| 8VC00  | Advanced imaging techniques             | Lopata         | 2/D  | 5  |
| 8LC00  | Applied cell biology                    | De Boer        | 1/A  | 5  |
| 6BER02 | MOC - Macro organic chemistry           | Palmans        | 2/A  | 5  |
| 8P340  | Project Biomechanics                    | Van de Vosse   | 3/B  | 5  |
| 8P380  | Project Lab on chip                     | Gumuscu Sefunc | 3/B  | 5  |
| 8CB10  | Simulation biochemical systems          | De Greef       | 3/C  | 5  |
| 8TC20  | Basic tissue engineering                | Dias Castilho  | 3/C  | 5  |
| 8P350  | Project Tissue engineering              | Smits          | 3/D  | 5  |
| 8P361  | Project Imaging                         | Veta           | 3/E  | 5  |
| 8BE030 | Medical image analysis                  | Scannell       | 4/A  | 5  |
| 8BE040 | Cardiovascular pathophysiology          | Bovendeerd     | 4/A  | 5  |
| 8P313  | Instrumental analysis                   | Abdelmohsen    | 4/A  | 5  |
| 8CB20  | System estimation & control for biology | De Greef       | 4/B  | 5  |

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