# Programming and information technology 213 (MPR 213)

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| **Qualification** | Undergraduate |
| **Faculty** | Faculty of Engineering, Built Environment and Information Technology |
| **Module credits** | 18.00 |
| **Programmes** | BEng Chemical Engineering |
| | BEng Chemical Engineering Engage |
| | BEng Civil Engineering |
| | BEng Civil Engineering Engage |
| | BEng Industrial Engineering |
| | BEng Industrial Engineering Engage |
| | BEng Mechanical Engineering |
| | BEng Mechanical Engineering Engage |
| | BEng Metallurgical Engineering |
| | BEng Metallurgical Engineering Engage |
| | BEng Mining Engineering |
| | BEng Mining Engineering Engage |
| **Prerequisites** | No prerequisites. |
| **Contact time** | 2 practicals per week, 4 lectures per week |
| **Language of tuition** | Both Afr and Eng |
| **Academic organisation** | Mechanical and Aeronautical En |
| **Period of presentation** | Semester 1 |

**Module content**

Advanced spreadsheet applications: Named ranges, linear algebra, solution of systems of equations, regression, interpolation, optimisation and table manipulation. Basic structured programming: Looping, branching, subroutines, iteration, reading and writing data files. Development, coding and debugging of simple programs in a high level programming language. Programming principles are illustrated via mathematical concepts such as limits, differentiation, integration and linear algebra. Structured programming by making use of functions and available toolboxes. Basic graphical output (plotting is also covered). Different information resources, searching and management of information. Use of databases. Development of webpages. Hardware interaction and control of equipment and systems.

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