REMARKS

a. Admission requirement(s) and selection criteria:

• FOR APPLICANTS WHO OBTAINED A SENIOR CERTIFICATE BEFORE 2008:

Admission requirement(s):
A Senior Certificate or an equivalent qualification, with a D symbol (50 – 59%) at Higher Grade or a C symbol (60 – 69%) at Standard Grade for English, and C symbols (60 – 69%) at Higher Grade or B symbols (70 – 79%) at Standard Grade for Mathematics and Physical Science.

Applicants with D symbols (50 – 59%) at Higher Grade or C symbols (60 – 69%) at Standard Grade for English and Mathematics and an E symbol (40 – 49%) at Higher Grade or a D symbol (50 – 59%) at Standard Grade for Physical Science will be considered for admission to the extended programme only.

Selection criteria:
To be considered for the National Diploma, applicants must have an Admission Point Score (APS) of at least 28. Applicants with a score of 20 to 27 will be considered for the extended programme only.

Assessment procedure:
All applications received by the published due dates (as indicated on page 3) will be ranked according to the APS achieved. After consideration of the Departmental Student Enrolment Plan (SEP), only the highest ranked applicants will be accepted to fill the available places. A waiting list consisting of the remainder of the applicants will provide an opportunity for applicants to fill places created by accepted students failing to meet the enrolment dates.

• FOR APPLICANTS WHO OBTAINED A NATIONAL SENIOR CERTIFICATE IN OR AFTER 2008:

Admission requirement(s):
A National Senior Certificate with a bachelor’s degree or a diploma endorsement, or an equivalent qualification, with an achievement level of at least 4 for English (home language or first additional language), 5 for Mathematics and 5 for Physical Sciences.

Applicants with a 4 for English, 4 for Mathematics and 3 for Physical Sciences will be considered for admission to the extended programme only.

Applicants who do not meet the above criteria for Mathematics and/or Physical Sciences for admission to the National Diploma or National Diploma (extended), may enrol for Mathematics N3/N4 and/or Engineering Sciences N3/N4 or Mathematics and/or Engineering Sciences, as presented as part of the National Certificate Vocational (NCV) at NQF Level 4, at any Technical and Vocational Education and Training (TVET) College. If these subjects are successfully passed at a performance level of at least 60% (for the National Diploma), or 50% (National Diploma - extended), they may re-apply for admission to the qualification at the University.
Selection criteria:
To be considered for the National Diploma, applicants must have an Admission Point Score (APS) of at least 28. Applicants with a score of 20 to 27 will be considered for the extended programme only.

Assessment procedure:
All applications received by the published due dates (as indicated on page 3) will be ranked according to the APS achieved. After consideration of the Departmental Student Enrolment Plan (SEP), only the highest ranked applicants will be accepted to fill the available places. A waiting list consisting of the remainder of the applicants will provide an opportunity for applicants to fill places created by accepted students failing to meet the enrolment dates.

• FOR APPLICANTS WHO OBTAINED A QUALIFICATION FROM TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) COLLEGES (PREVIOUSLY KNOWN AS FET COLLEGES):

Applicants with a National Certificate (Vocational) at NQF Level 4:

Admission requirement(s):
A National Certificate (Vocational) at NQF Level 4 with a bachelor’s degree or a diploma endorsement issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least 50% (APS of 4) for English and Mathematics, and at least 60% (APS of 5) for Physical Sciences/Applied Engineering Technology and any two other vocational subjects.

Selection criteria:
To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least 23.

Applicants with a National N Certificate as published in Nated 191: N3 (NQF Level 4) and N4/N5/N6 (NQF Level 5):
A National Senior Certificate or a National N Certificate as published in Nated 191: N3 (NQF Level 4) and N4/N5/N6 (NQF Level 5) issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least 50% (APS of 4) for English and 60% (APS of 5) for Mathematics N3 and Engineering Sciences N3.

Applicants will be exempted from certain subjects on the grounds of N4/N5/N6 subjects passed (a minimum of 50% of the qualification’s subjects). Exemption will be granted from equivalent engineering subjects (including Mathematics and Engineering Sciences) passed with at least 60% (APS of 5).

Applicants with a National N Diploma (NQF Level 6):
Applicants with a National N Diploma (Nated 191: N6 with a Trade Certificate) issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), who obtained at least 60% for all subjects completed for N4/N5/N6 certificates at NQF Level 5 (including Mathematics and Engineering Sciences), will be –
- exempted from certain S1/S2 subjects on the grounds of N4/N5/N6 subjects passed (a maximum of 50% of the qualification’s subjects); and

b. Minimum duration:
Three years.

c. Presentation:
Day and block-mode classes. Classes and assessments may take place on Friday afternoons and/or Saturdays. Block-mode classes are only offered to designated groups (students employed by the Department of Defence with extensive work experience).

d. Intake for the qualification:
January and July.
e. **Exclusion and readmission:**  
   See Chapter 2 of Students’ Rules and Regulations.

f. **Recognition of Prior Learning (RPL), equivalence and status:**  
   See Chapter 30 of Students’ Rules and Regulations.

g. **Accreditation by professional body:**  
   This qualification has been accredited by the Engineering Council of South Africa (ECSA).

h. **Work-Integrated Learning I and II:**  
   Students may enrol for only one subject during any of the Work-Integrated Learning periods, 
   provided that the Work-Integrated Learning provider agrees to such an arrangement in writing. 
   If the subject is the last and only outstanding subject and the student has written the final 
   exam within the past two years, the student may apply for an exit examination. See Chapter 
   5 of the Students’ Rules and Regulations for more information.

i. **Practicals:**  
   It is compulsory for students to attend the practical classes. Students must pass the practical 
   component of a subject to be admitted to the examination.

j. **Waiving of prerequisite subjects:**  
   Prerequisites will only be waived in highly exceptional cases, based on a motivation by the 
   Head of the Department and approved by the Executive Dean (prerequisite subjects published 
   in Report 151 are excluded).

k. **Subject credits:**  
   Subject credits are shown in brackets after each subject.

Key to asterisks:  
* Information does not correspond to information in Report 151.  
(Deviations approved by the Senate in August 2005, May 2008 and April 2010.)

### CURRICULUM

**FIRST YEAR**

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUBJECT</th>
<th>CREDIT</th>
<th>PREREQUISITE SUBJECT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAI101T</td>
<td>Computer-Aided Draughting I*</td>
<td>(0,047)*</td>
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</tr>
<tr>
<td>EGN101T</td>
<td>Engineering Communication I*</td>
<td>(0,042)</td>
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<tr>
<td>ETT101T</td>
<td>Electrotechnology I</td>
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<tr>
<td>MAT171T</td>
<td>Mathematics I</td>
<td>(0,083)</td>
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<tr>
<td>MDR101B</td>
<td>Mechanical Engineering Drawing I</td>
<td>(0,083)</td>
<td></td>
</tr>
<tr>
<td>MHC101T</td>
<td>Mechanics I</td>
<td>(0,083)</td>
<td></td>
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<tr>
<td>MME101T</td>
<td>Mechanical Manufacturing Engineering I</td>
<td>(0,083)</td>
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**TOTAL CREDITS FOR THE SEMESTER:** 0,504

**SECOND SEMESTER**

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUBJECT</th>
<th>CREDIT</th>
<th>PREREQUISITE SUBJECT(S)</th>
</tr>
</thead>
</table>
| EWK121T| Engineering Work Study I               | (0,083) | Engineering Communication I  
          |                                       |         | Mathematics I  
          |                                       |         | Mechanical Manufacturing Engineering I  
<pre><code>      |                                       |         | Mechanics I  |
</code></pre>
<p>| MAT271B| Mathematics II                         | (0,083) | Mathematics I  |
| MFR201T| Manufacturing Relations II             | (0,083) | Engineering Communication I  |</p>
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<thead>
<tr>
<th>CODE</th>
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<tbody>
<tr>
<td>MME201T</td>
<td>Mechanical Manufacturing Engineering II</td>
<td>(0,083)</td>
<td>Computer-Aided Draughting I</td>
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<tr>
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<td></td>
<td></td>
<td>Mechanical Engineering Drawing I</td>
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<td></td>
<td></td>
<td></td>
<td>Mechanical Manufacturing Engineering I</td>
</tr>
<tr>
<td>PEI111T</td>
<td>Production Engineering: Industrial I</td>
<td>(0,083)</td>
<td>Mathematics I</td>
</tr>
<tr>
<td>QTQ101T</td>
<td>Qualitative Techniques I</td>
<td>(0,083)</td>
<td>Mathematics I</td>
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<td></td>
<td>TOTAL CREDITS FOR THE FIRST YEAR:</td>
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<tbody>
<tr>
<td>CSG201T</td>
<td>Costing II</td>
<td>(0,083)</td>
<td>Engineering Work Study I</td>
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<tr>
<td>EWK221T</td>
<td>Engineering Work Study II</td>
<td>(0,083)</td>
<td>Engineering Work Study I</td>
</tr>
<tr>
<td>FLM201T</td>
<td>Facility Layout and Materials Handling II</td>
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<td>MAT351T Mathematics III</td>
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<td></td>
<td>PEI211T Production Engineering: Industrial II</td>
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<td>QAS201T Quality Assurance II</td>
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<td>TOTAL CREDITS FOR THE SEMESTER:</td>
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<table>
<thead>
<tr>
<th>CODE</th>
<th>SUBJECT</th>
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<tbody>
<tr>
<td>ATM301B</td>
<td>Automation III</td>
<td>(0,085)*</td>
<td>Mechanical Manufacturing Engineering II</td>
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<tr>
<td>EWK321T</td>
<td>Engineering Work Study III</td>
<td>(0,083)</td>
<td>Engineering Work Study II</td>
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<tr>
<td>IAC321T</td>
<td>Industrial Accounting III</td>
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<td>Costing II</td>
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<tr>
<td>IED201T</td>
<td>Industrial Engineering Systems Design II*</td>
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<td>Engineering Communication I</td>
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<td></td>
<td>ILE301T Industrial Leadership III</td>
<td>(0,083)</td>
<td>Manufacturing Relations II</td>
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<tr>
<td></td>
<td>ORS321T Operational Research III</td>
<td>(0,083)</td>
<td>Production Engineering: Industrial II</td>
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<td>TOTAL CREDITS FOR THE SEMESTER:</td>
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<td>TOTAL CREDITS FOR THE SECOND YEAR:</td>
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<tbody>
<tr>
<td>EXP1IEN</td>
<td>Work-Integrated Learning I</td>
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<td>TOTAL CREDITS FOR THE SEMESTER:</td>
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SECOND SEMESTER

EXP2IEN  Work-Integrated Learning II  (0,500)  Work-Integrated Learning I

TOTAL CREDITS FOR THE SEMESTER:  0,500

TOTAL CREDITS FOR THE THIRD YEAR:  1,000

TOTAL CREDITS FOR THE QUALIFICATION:  3,000

SUBJECT/MODULE INFORMATION (OVERVIEW OF SYLLABUS)

The syllabus content is subject to change to accommodate industry changes. Please note that a more detailed syllabus is available at the Department or in the study guide that is applicable to a particular subject. On 13 October 2017, the syllabus content was defined as follows:

A

AUTOMATION III (ATM301B)  1 X 3-HOUR PAPER
(Subject custodian: Department of Industrial Engineering)

C

COMPUTER-AIDED DRAUGHTING I (CAI101T)  CONTINUOUS ASSESSMENT
(Subject custodian: Department of Mechanical Engineering, Mechatronics and Industrial Design)
Introduction to computer-aided design (CAD), various software application packages, component and assembly modeling. Students operate CAD software in order to produce three-dimensional models, providing a basis for more advanced CAD applications and compound drawings. (Total tuition time: ± 80 hours)

COSTING II (CSG201T)  1 X 3-HOUR PAPER
(Subject custodian: Department of Managerial Accounting and Finance)
Basic methods and a group of selected techniques of cost accounting for application in the business environment. The subject consists of two modules. (Total tuition time: ± 68 hours)

E

ELECTROTECHNOLOGY I (ETT101T)  1 X 3-HOUR PAPER
(Subject custodian: Department of Electrical Engineering)
The correct use of SI units and their applications. Construction and care of batteries. WS theory and different measuring instruments. The influence of magnetic lines, the application and use of magnetic fields, inductance and the factors that influence it. Capacitors and their functioning. (Total tuition time: ± 70 hours)

ENGINEERING COMMUNICATION I (EGN101T)  CONTINUOUS ASSESSMENT
(Subject custodian: Department of Applied Languages)
Communication theory, non-verbal communication (body language). Oral presentations, interviews, developing leadership and participation skills. Technical reports and correspondence. (Total tuition time: ± 68 hours)

ENGINEERING WORK STUDY I (EWK121T)  1 X 3-HOUR PAPER
(Subject custodian: Department of Industrial Engineering)
ENGINEERING WORK STUDY II (EWK221T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Industrial Engineering*)

ENGINEERING WORK STUDY III (EWK321T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Industrial Engineering*)
Performance improvement programs. Productivity improvement, Objective Matrix, South African Excellence Model. Systems analyses and design for management. (Total tuition time: ± 68 hours)

F

FACILITY LAYOUT AND MATERIALS HANDLING II (FLM201T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Industrial Engineering*)

I

INDUSTRIAL ACCOUNTING III (IAC321T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Accounting*)
Introduction to financial management. Financial analysis, planning and control. Working capital management. Investment decisions. Computer applications. (Total tuition time: ± 68 hours)

INDUSTRIAL ENGINEERING SYSTEMS DESIGN II (IED201T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Industrial Engineering*)
Introduction to systems engineering, the systems design process from conceptual to detail design, models for economic evaluations, design for operational feasibility with emphasis on reliability and maintainability. (Total tuition time: ± 68 hours)

INDUSTRIAL LEADERSHIP III (ILE301T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Management and Entrepreneurship*)
Leaders and management. Management planning, organising, leading and control. (Total tuition time: ± 68 hours)

M

MANUFACTURING RELATIONS II (MFR201T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of People Management and Development*)

MATHEMATICS I (MAT171T) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Mathematics and Statistics*)
Basic mathematics. Differentiation. Integration. Matrices and determinants. Vectors. Data handling. Complex numbers or mensuration. (Total tuition time: ± 60 hours)

MATHEMATICS II (MAT271B) 1 X 3-HOUR PAPER
(*Subject custodian: Department of Mathematics and Statistics*)
Revision of differentiation. Differentiation of functions with more than one variable. Further integration. Numerical methods. First-order ordinary differential equations. Matrices (Gauss elimination). (Total tuition time: ± 60 hours)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Description</th>
<th>Tuition Time</th>
</tr>
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<tbody>
<tr>
<td>MME201T</td>
<td>MECHANICAL MANUFACTURING ENGINEERING II</td>
<td>1</td>
<td></td>
<td>Measurement. Operative practical testing. Quality and dimensional control. Gauging and measurement. Measuring instruments. Comparators. Surface measurement. (Total tuition time: ± 68 hours)</td>
<td></td>
</tr>
<tr>
<td>MHC101T</td>
<td>MECHANICS I</td>
<td>1</td>
<td></td>
<td>Moments, centroids, kinematics, forces and Newton's laws, momentum and impulse, work and energy, circular motion, statics. (Total tuition time: not available)</td>
<td></td>
</tr>
<tr>
<td>PEI111T</td>
<td>PRODUCTION ENGINEERING: INDUSTRIAL I</td>
<td>1</td>
<td></td>
<td>Introduction to production management. Production management in perspective. The nature of operating systems and operations management. Product service design. Facility planning and layout. Capacity management. (Total tuition time: ± 68 hours)</td>
<td></td>
</tr>
</tbody>
</table>
QUALITY ASSURANCE II (QAS201T) 1 X 3-HOUR PAPER
(Subject custodian: Department of Industrial Engineering)
Essentials of a quality management system. Statistical process control: introduction to quality improvement. The quality life cycle, introduction to statistical process control, basic statistical calculations, analyses and interpretation of control charts, control of attribute control charts, design of experiments, principles of statistical design and analysis, experiments. (Total tuition time: ± 90 hours)

WORK-INTEGRATED LEARNING I (EXP1IEN) WORK-INTEGRATED LEARNING
(Subject custodian: Department of Industrial Engineering)
Workshop factors: labour machine technology (types and uses), workshop planning and control, inventory control and storage, drawing office practice (design and interpretation), maintenance. Industrial engineering aspects: method study, time studies, labour standards, distribution line analysis, labour schedules. (Total tuition time: six months)

WORK-INTEGRATED LEARNING II (EXP2IEN) WORK-INTEGRATED LEARNING
(Subject custodian: Department of Industrial Engineering)
Work study. Quality assurance. Production. Systems. Facility layout and materials handling. The following fields could be covered: material-handling analysis, equipment specifications, selection and evaluation, mechanisation and automation, plant layout (analysis and renewal), office layout and planning, productivity (equipment utilisation studies and capacity analysis), form design and control, industrial systems analysis and design. (Total tuition time: six months)