UNIVERSITY OF PRETORIA

Department of Chemical Engineering

Postgraduate Information for 2020 15th October 2019



STUDENTS

Academic staff: Total: 17 Students: Total: 821 Undergraduate students (589) • 1st year: 229 • 2nd year: 90 • 3rd year: 187 • 4th year: 83

Postgraduate students (232):

- Hons.: 141
- Master's: 55
- PhD: 36



STAFF

- Academic Staff: (17 academic + 3)
 - 5 Professors (PV, PC, WN, WF, EC)
 - 4 Associate Professors (MH, NM, JL, DvV)
 - 5 Senior Lecturers (BP, ET, CS, ST, DB)
 - 1 Researcher (PS)
 - 2 Vacancies
 - 3 Chairs
 - DST Chair in Fluoromaterials and Process Integration
 - SARChI Chair in Carbon Chemistry (Shared)
 - Sedibeng Water Chair in Water Utilisation Engineering
- Senior Researcher: (1)
 - Environmental Engineering (GK)
- Extraordinary Professors: (2) (TM, ED)
- Extraordinary Lecturer: (1) (BC)
 - Biotechnology



RESEARCH FOCUS AREAS

- Bioreaction Engineering & Biotechnology
- Advanced Materials: Carbon, Fluorine,
 Polymers & Clays, Product Development
- Environmental & Water Utilisation
 Engineering
- Energy Systems, Modelling, Optimisation & Control



INTERNATIONAL COLLABORATION

- Mälardalen University, Västerås, Sweden
- Institut Charles Gerhardt, Montpellier, France
- Martin Luther University Halle-Wittenberg, Germany
- Leibniz Institute of Polymer Research, Germany
- Eduardo Mondlane University, Maputo, Mozambique
- University of Kentucky, USA
- National Renewable Energy Lab. (NREL), USA
- Herriot-Watt University, UK
- University of Lleida, Spain
- Universitat Rovira I Virgili, Spain
- Stuttgart University, Germany
- Harvard University, USA
- University of British Columbia, Canada



POSTGRADUATE STUDIES

Focus Areas

- Water Utilisation & Environmental Engineering
 - Evans Chirwa / Deon Brink/ Shepherd Tichapondwa / Gerrit Kornelius
- Applied Materials & Product Design
 - Walter Focke / Johan Labuschagne /Philip Crouse / Dawie v Vuuren / Elizbe du Toit / Barend du Plessis
- Bioreaction Engineering & Biotechnology
 - Willie Nicol / Mike Heydenrych/ Berdine Coetzee
- Process Modelling, Optimisation & Control
 - Carl Sandrock / Philip de Vaal



ENERGY, WATER, NANO, BIOTECHNOLOGY

POSTGRADUATE STUDIES

B.Eng(Hons)/M.Eng specialisation in:

- Control Engineering MEng(Control Eng)
- Environmental Engineering MEng(Env.Eng)
- Water Utilisation Engineering MEng(Wat.Util.)

MEng(Chem)

Or focus in:

- Carbon, Fluorine & Polymer Matls. Science
- Process Design
- Bioreaction Engineering
- Tribology
- Chemical Engineering



POSTGRADUATE STUDIES

- 2-year programme (M.Eng):
 - Year 1: B.Eng(Hons) Coursework (4 x 32-credit modules = 128 credits)
 - 3 x 5-day blocks per semester
 - Year 2: M.Eng (128 credits)
 - Preferably full-time
 - 128 credits research project

Close cooperation with industry



B.Eng (Hons)(Chem) Specialising in Process Design

At least 2 of the following modules:

- First Semester:
 - CPO 732 Chemical Product Design (32 credits)
 - CSP 732 Process Control System Development (32 credits)
 - CRH 732 Bioreaction Engineering (32 credits)
- Second Semester:
 - CIP 732 Process Integration (32 credits)
 - CSK 732 Separation Technology (32 credits)
 - CRO 700 Research Orientation (32 Credits)



B.Eng (Hons)(Chem) Specialising in Carbon, Fluorine & Polymer Matls. Science

Four (4) of the following modules:

First Semester:

- CPO 732 PRODUCT DESIGN
- CPW732 POLYMER MATERIALS SCIENCE
- CYM 732 ADDITIVE TECHNOLOGY
- CFT 732 FLUORO-MATERIALS SCIENCE
- CIR 702 CHEMICAL ENGINEERING

Second Semester:

- CPP 732 POLYMER PROCESSING
- CSK 732 SEPARATION TECHNOLOGY

CMS 732 CARBON MATERIALS SCIENCE & TECHNOLOGY



B.Eng (Hons) (Chem) Specialising in Bioreaction Engineering

- CRH 732 Bio-reaction Engineering 732 (32 credits) (2nd semester)
- CIR 702 Chemical Engineering 702 (32 credits) (2nd semester)
- CRO 700 Research Orientation (32 credits) (2nd semester)
- + another module to be discussed with Prof Nicol



B.Eng(Hons)(Control Engineering)

First Semester:

- CBT700 Multivariable Control Theory (32 credits)
 CSP732 Process Control System Development
 - (32 credits)

Second Semester:

- CBO700 Multivariable Control Design (32 credits)
- CML732 Model-based Control Laboratory (32 credits)



B.Eng(Hons)(Environmental Engineering)

First Semester:

- CEM 780 Principles of Environmental Engineering (32 credits)
- WQB 780 Water Quality Management (32 credits)

Second Semester:

- CAM 780 Air Quality Control (32 credits)
- WAI 780 Industrial Waste Engineering (32 credits)



B.Eng(Hons)(Water Utilisation Engineering)

First Semester:

- WCW 780 Chemical Water Treatment (32 credits)
- WQB 780 Water Quality Management (32 credits)

Second Semester:

- WBW 780 Biological Water Treatment (32 credits)
- WAI 780 Industrial Waste Engineering (32credits)



B.Eng(Hons) – Additional modules

- Modules from other departments:
 - Engineering & Technology Management
 - Mechanical Engineering
 - Industrial Engineering
 - Etc.



Availability of Projects & Bursaries

- Contact individual staff members:
 - Water Utilisation & Env Eng: Prof Chirwa, Drr Brink, Tichapondwa, Kornelius
 - Advanced Materials: Proff Focke, Crouse, Labuschagne, v Vuuren
 - Bioreaction Eng. & Bioprocessing: Proff Nicol & Heydenrych
 - Energy Systems, Modelling, Control & Optimisation: Sandrock, Sonnendecker, de Vaal (Tribology)



CONCLUSION

Departmental Website:

- http://www.up.ac.za/chemeng
- chemeng.up.ac.za

