

Presenter: Trevor Stroud

Project title: NMMU Racing SAE Baja Project

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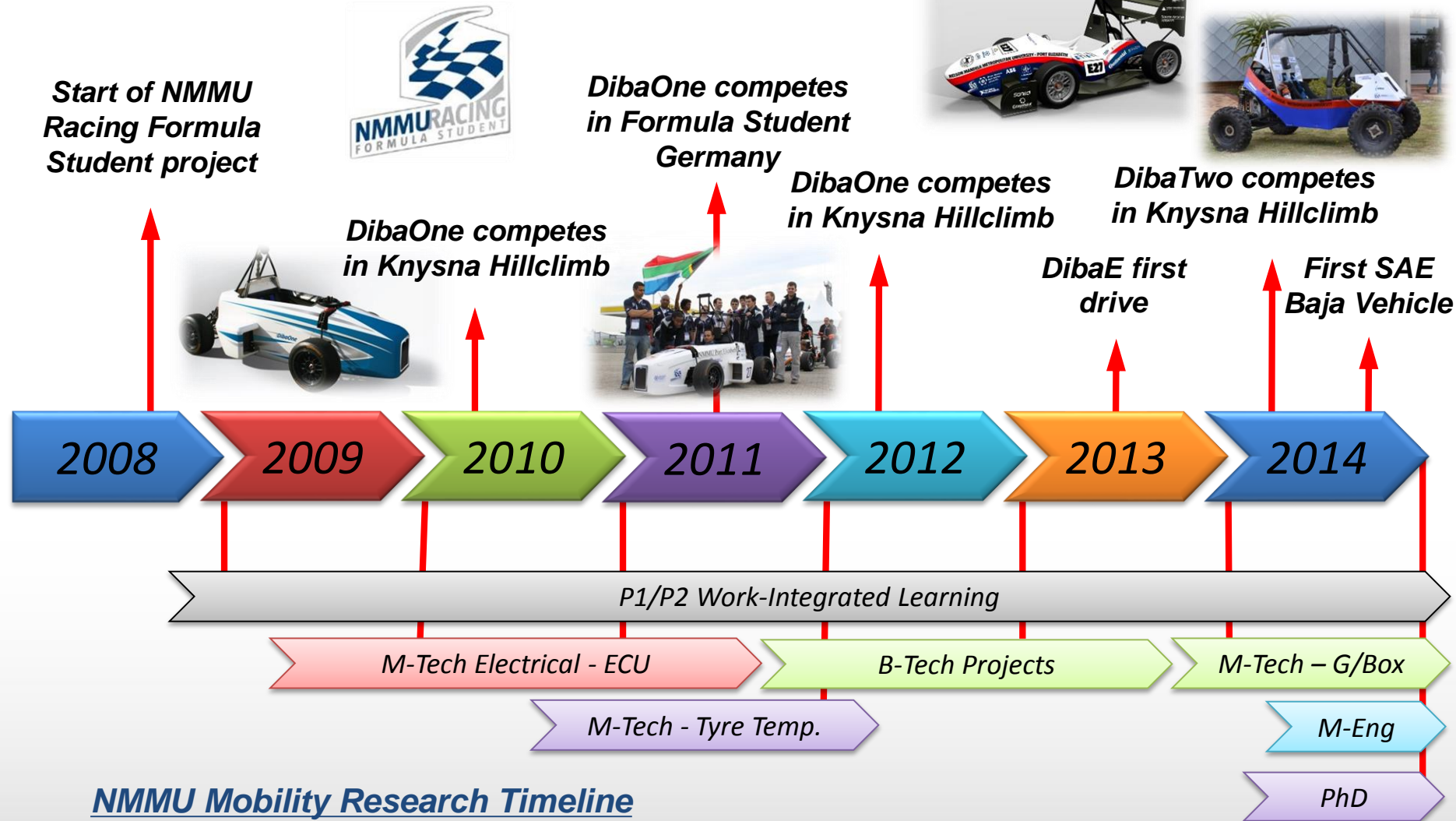


NMMU Racing



Project History

NMMU Racing Project Timeline



NMMU Mobility Research Timeline

Teaching & Learning

- WIL (Mechanical Eng.)
- Vacation Work (Mechatronics)
- B-Tech Design Projects
- B-Eng Final Year Projects

Research

- Master's Degrees (Mechanical/Electrical/Mechatronic Engineering)
- PhD (Mechanical Engineering)
- Publications (Vehicle Dynamics)



Target Groups

- Diploma Engineering Students
- B-Tech/B-Eng Engineering Students
- Post-grad students
- Academic staff (research)

Partners

- Industry (VWSA, VW Racing, Jendamark, Continental SA)
- NMMU (AMTC, eNTSA, UYILO, Mech. Eng., Mechatronics)

Mechanical & Electrical WIL (P1/P2)

- SAE Baja = 5 students
- Formula Student = 2 students

Mechatronics Vacation Work

- Formula Student = 10 students p/a

Mechatronics Final Year Projects

- 2013 = 1 Active aerodynamic wing control system
- 2014 = 1 Active pneumatic suspension control
- 2015 = 3 Battery management,
Powertrain management,
Launch control system

Masters Research Projects

- V. Mohanlal – Characterisation of a fluidic muscle pneumatic suspension system

PhD Research Projects

- T. Stroud – Fluidic muscle active pneumatic suspension for a light experimental vehicle

Publications

- SAIMEchE R&D Journal - Real-time tyre temperature analysis
- 2015 PRASA-RobMech International Conference - Off-Road Vehicle Active Suspension



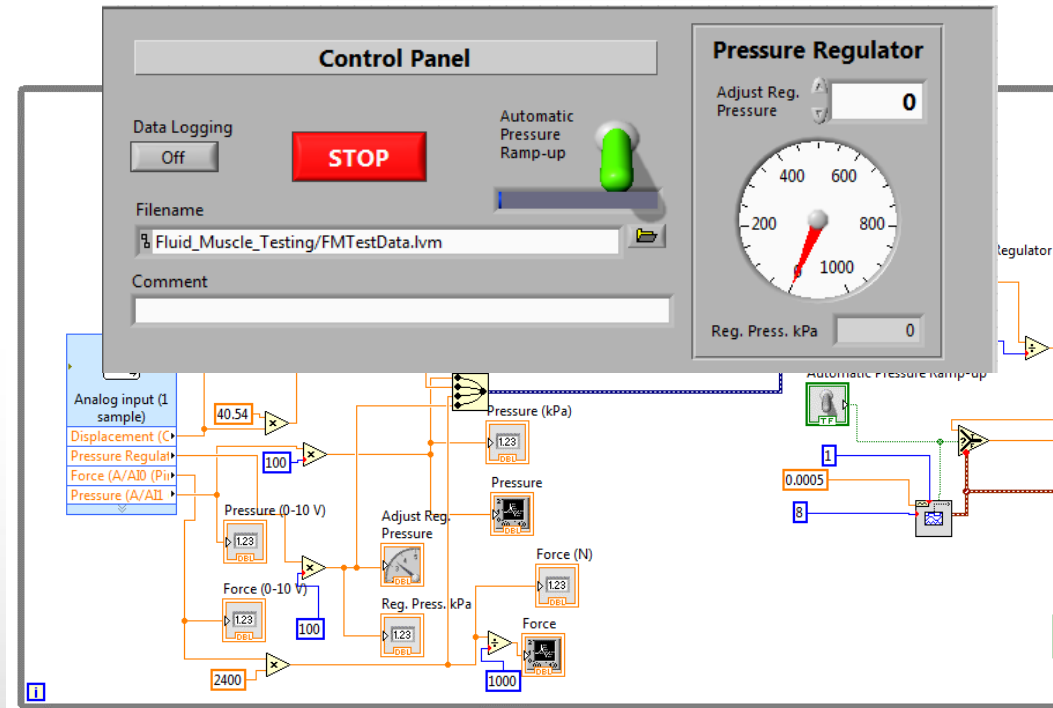
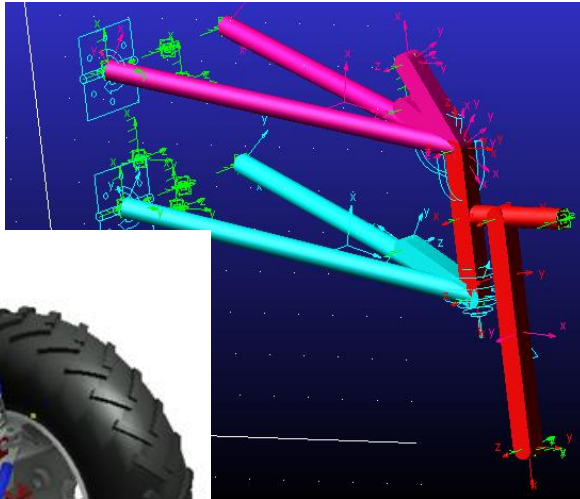
Mechanical Engineering

- Mechanical design
- CAD modelling & simulation
- Manufacturing processes
- Physical testing
- Project management
- Component & material sourcing
- Staff: T.Stroud

Vehicle Project

Mechatronic Engineering

- Electrical system design
- Control systems
- Data acquisition
- Telemetry
- Simulation & testing
- Staff: B.Roberts



2015 Project Plan



Benefits

- Practical experience for engineering students
 - Research & Design, Manufacturing & assembly, Project management & procurement, Working in teams under time pressure, Hands-on engineering experience
- Enhanced student employability (eg. Recruiting partnership with Jendamark)
- National exposure for students at competition
- Benchmarking NMMU against other Universities
- Enhanced collaboration opportunities (eg. Research with Pretoria Uni.)
- Gateway into post-graduate research
- SAE Baja vehicle creates a low-cost automotive research platform
- Final year projects produce high-level well-documented engineering designs

Challenges & Lessons

- Recruitment and retention of students (bursaries for B-Tech?)
- Securing Funding (vehicle build, tools & equipment)
- Balancing staff academic responsibilities with project management demands
- New Engineering Qualification in 2017 (No WIL)
- Funding and nurturing post-graduate students



- SAE Baja Competition 2014

