POSTER 1

# Inclusive Curriculum for Mechanical and Electronic System Design

Bournemouth University

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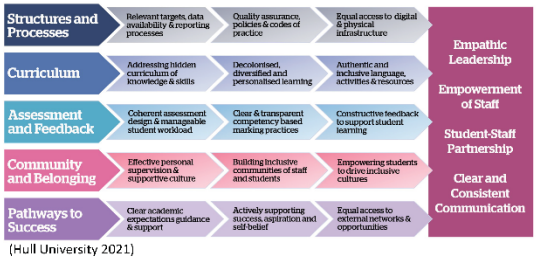
**Introduction** Highly technical final year UG 40-credit unit for Design Engineering Course as merger of two former 20-credit units: Advance Mechanics and Electronics

## Framework

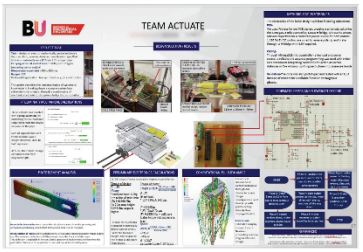


(Hull University 2021)

## Methodology

### Structures and Processes

- Blended Learning: Pre-uploaded weekly slides, recorded lectures and demos on the VLE
- 12X2 Lectures (Mechanics & Electronics): Core knowledge transfer
- 6X2 Design Clinique: Groupwork monitor, feedback & feedforward
- 6X2 Workshop/Lab Sessions: Practical experience
- Use of Advanced Simulation Tools: Solidworks, MATLAB, Proteus

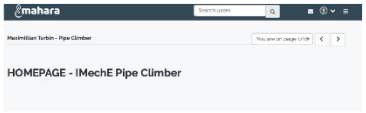



### Curriculum

- Problem/Project based pedagogy (Institute of Mechanical Engineering (IMechE)'s national design challenge)
- Group based learning /Social constructivism pedagogy

### Assessment and Feedback

- Group Mechatronics Project (40%): Prototype Competition, Poster, Presentation for the IMechE Design Challenge
- Individual Mechatronics e-Portfolio (60%): Mathematical System Modelling, Critical Thinking, Analysis and Interpretation of results
- Peer review (Self, group members and other groups assessment )
- Regular bespoke formative and summative feedback and Rubric




### Community and Belonging

- Mixed groups of students (gender, ethnicity, neurodiversity and etc)
- Collaborative Environment (group sessions and virtual platforms)
- e-Platform to facilitate effective communication between groupmates
- Monitored supervision journal/forums to address questions

### Pathway to Success

- Weekly announcements on VLE reminding each week plan
- e-Portfolio individual assignment submission: potential to be as evidence of expertise in support of their CV
- Research informed education practice
- Soft skills training (Critical Thinking, Group work, e-Portfolio & etc)

## Outcome

100% pass rate with mean mark of 62 out of 100; High student engagement.

## Future Plan

Next year Robotics will be added to the curriculum

## References

Hull University, 2021, Inclusive Curriculum Framework
Lev Vygotsky, 1931, Adolescent Pedagogy development of thinking in adolescence