

Biomedical Engineering

Unpacked

Student Pack

General Engineering Overview

What do you think engineering means?

What skills do you think you need to be an engineer?

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How was engineering defined in the program?

Here are some questions to reflect on when deciding whether you want to be an engineer:

- 1) Do you want to make the world a better place?
- 2) Do you have creativity and imagination?
- 3) Are you able to process details?
- 4) Do you enjoy problem-solving?
- 5) Can you work in a group?
- 6) Are you able to communicate your ideas?
- 7) Do you want to use math/ science as a tool for solving real-world problems?



Biomedical Engineering Overview

How does the program define biomedical engineering?

There are different disciplines in biomedical engineering. These include:

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Questions to think about:

1) Which discipline of biomedical engineering sounds the most interesting and why?

2) Why do you want to be a biomedical engineer?

Group Activity:

Thinking About Biomedical Problems

What biomedical problems would you want to solve?

How would you approach solving them?

What possible limitations are there currently to solving this issue?

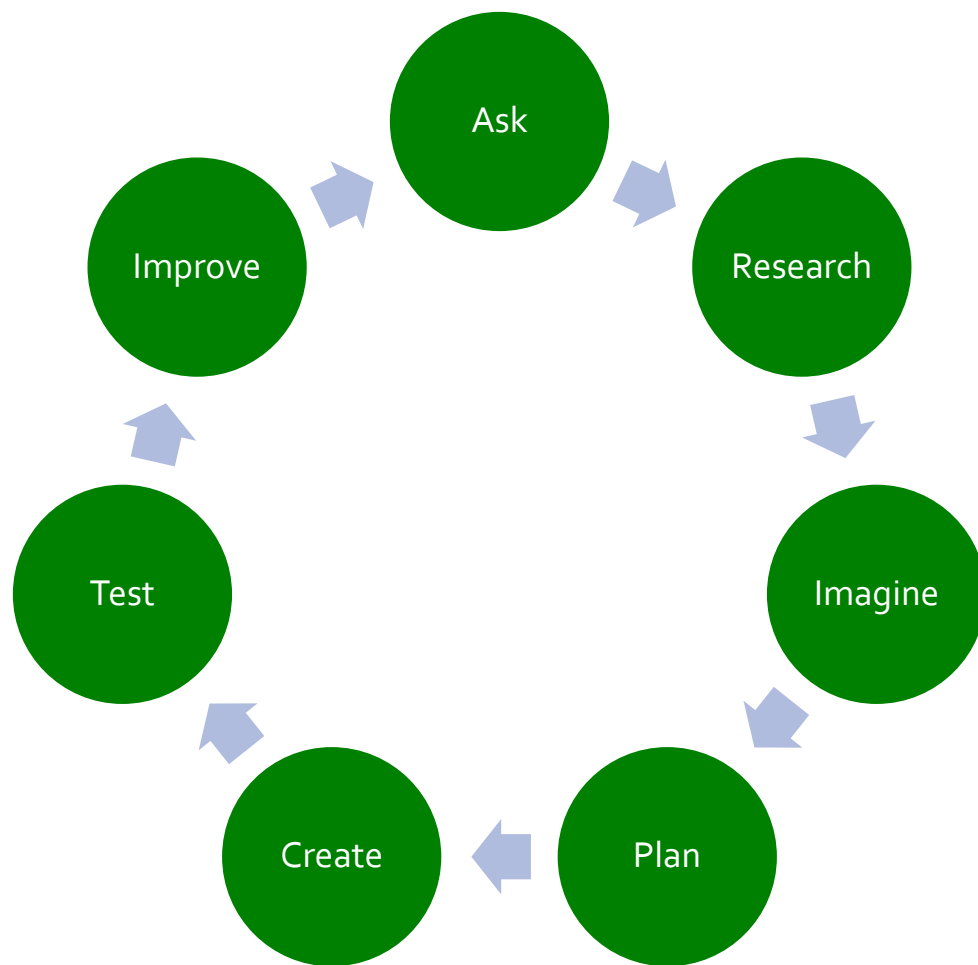
Can you brainstorm some ways of tackling these limitations?

List out the problems suggested but not discussed in your group. Are there any that excite you?

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Engineering Design Process



1) ASK

2) RESEARCH

3) IMAGINE

4) PLAN

5) CREATE

6) TEST

7) IMPROVE

Applying the Engineering Design Process

ASK

How can we measure pulse rate inexpensively and with minimal time investment?

Constraints:

- Cost
- Development time of 2 hrs
- User-friendly design and approach

RESEARCH

IMAGINE

Can you think of any possible solutions using our above constraints?

Please refer to the Solution Development Pack for the planning, creating, testing, and improving phases.

Post Activity Reflection

What did you most enjoy about the activity?

What did you find most challenging?

How could you improve your approach in the future?

Routes into Biomedical Engineering

High School

- Math and Science
- Recommended: biology and FS Math

University: South Africa

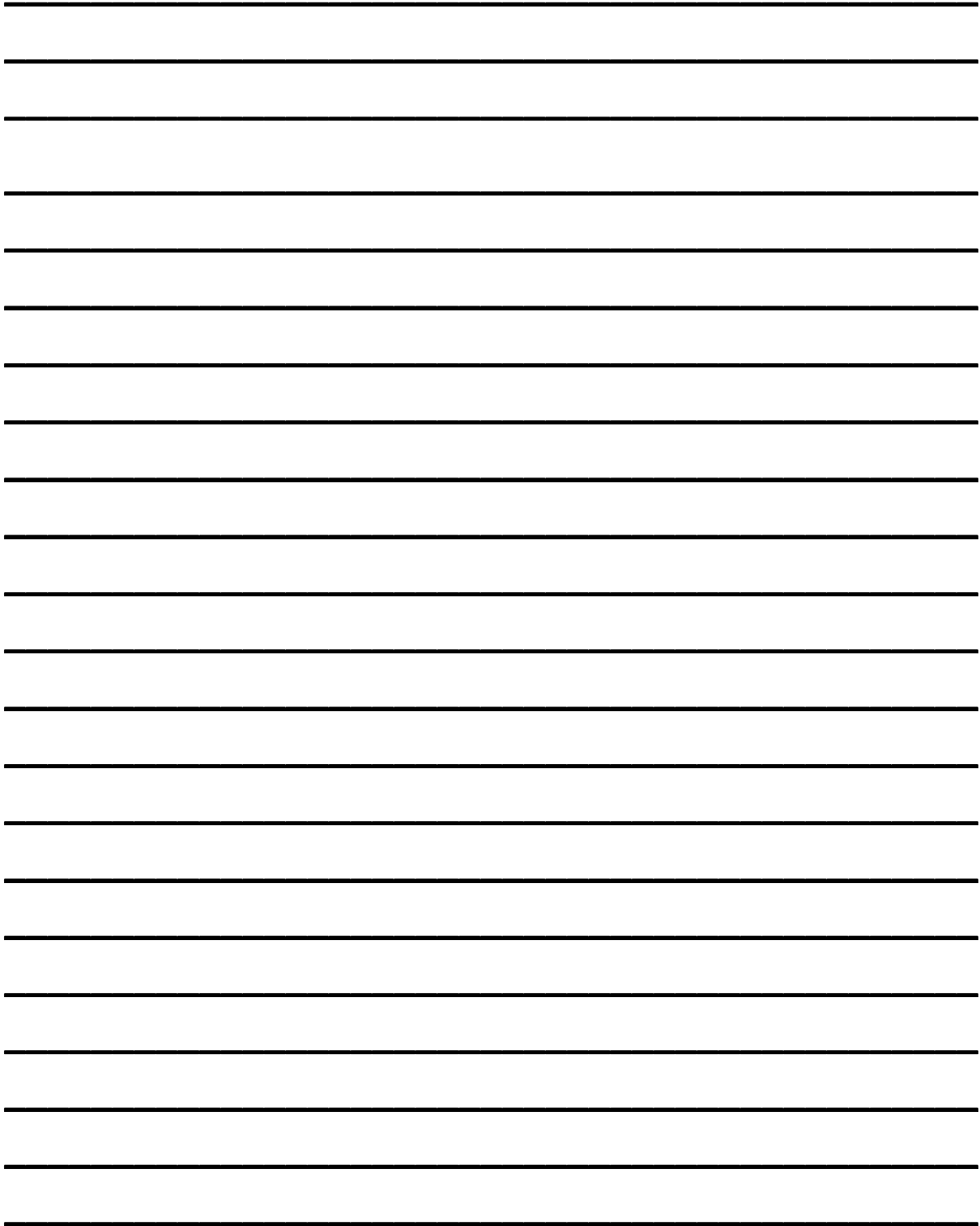
- Only the University of the Witwatersrand offers a biomed + electrical undergrad = 5 years
- Otherwise, 4-year engineering undergraduate with a master's in biomedical engineering.

Universities in South Africa with a strong Biomedical Engineering Department include:

- ❖ University of Cape Town
- ❖ University of the Witwatersrand
- ❖ University of Stellenbosch
- ❖ University of Pretoria

University: Overseas

- Can do 4-year undergrad in biomedical engineering directly



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