

Fakulti: <b>FAKULTI KEJURUTERAAN ELEKTRIK</b>	
Nama Matapelajaran:	Semakan : 1
Kod Matapelajaran : SKEL 3742	Tarikh Keluaran : 2007
	Pindaan Terakhir : 2022
	No. Prosedur : <b>PK-UTM-FKE-(0)-10</b>



## **SKEL 3742**

**FAKULTI KEJURUTERAAN ELEKTRIK  
UNIVERSITI TEKNOLOGI MALAYSIA  
SKUDAI, JOHOR**

**ECED DEPARTMENT**

**CHILDHOOD OBESITY & HEART DISEASE**

### **PROBLEM PACK**

Disediakan oleh : Nama : En. Ismail Ariffin Pn. Ismawati Abd. Ghani Pn. Norhafizah Ramli Dr. Puspa Inayat Khalid Dr. Norlaili Mat Safri Dr. Mitra Mohd Addi  Tandatangan : Cop :  Tarikh : 20 April 2022	Disahkan oleh : Ketua Jabatan Nama :  Tandatangan : Cop :  Tarikh :
--	---

## Problem Statement



The World Health Organization reported that more than 124 million children and adolescents aged 5-19 were obese in 2016 compared to under 1% in 1975<sup>1</sup>. Overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings. Obesity in children is known to have significant impacts to physical and psychological health. Overweight and obese children are very likely to remain obese as adults and have higher risk of developing non-communicable diseases (NCD) such as diabetes and cardiovascular disease. Studies found that severely obese children have higher blood pressures, worse cholesterol profiles, and higher blood sugar levels than those who were just overweight<sup>2,3,4</sup>.

The Agenda for Sustainable Development Goals (SGD) aims to reduce by one-third (1/3) premature mortality from NCDs through prevention and treatment and promote mental health and well-being by 2030<sup>5</sup>. Since obesity is a fundamental driver of many NCDs, it is at the heart of achieving the SGD target on NCDs

You are involved in a social movement to raise awareness of preventing childhood obesity through advocacy and dissemination of information. The social movement is invited to co-organize “Health Week” for a school and to advocate about the immediate and long-term consequences of childhood obesity to health and well-being and the implementation of effective interventions.

As a member of the engineering team in the social movement group, your team have decided to develop a prototype to help educate children about having a healthy heart. Your design consideration should include amplification of heart signal, filtering of heart signal and minimal noise interference. Considering the school children as your audience, the indicator/output of the system should be attractive and easily interpreted. The output/indicator can be in the form of audio or/and visual. The proposed design should be submitted in the form of a report and demonstrated to the “Health Week” committee before the rehearsal of the program.

- <sup>1</sup> World Health Organisation (WHO), *Facts Sheet: Obesity and Overweight*, June 2021, <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>
- <sup>2</sup> Nandini Mani, “Overweight children are at risk for heart disease as adults”, *Harvard Health Publishing*, Harvard Medical School, 30 September 2015
- <sup>3</sup> Asheley C. Skinner, Eliana M. Perrin, Leslie A. Moss and and Joseph A. Skelton, “Cardiometabolic Risks and Severity of Obesity in Children and Young Adults”, *New England Journal of Medicine*, 2015, vol. 373 (14), pp. 1307-1317.
- <sup>4</sup> Umer, A., Kelley, G.A., Cottrell, L. *et al.* “Childhood obesity and adult cardiovascular disease risk factors: a systematic review with meta-analysis.” *BMC Public Health* 2017, vol. 17 (683)
- <sup>5</sup> United Nations, Sustainable Development Goals, 2015, <https://www.un.org/sustainabledevelopment/health>