CGCU Grant Application: ICBE Arduino Workshops

Following the success and feedback from the IC HealthHack that the Bioengineering Society co-organised, ICBE is organising a set of workshops that will allow Bioengineering students of younger years or without broad technical experience to learn of the basic use of Arduinos for their interest and further development as Bioengineers.

Aim:
To show Bioengineering students how Arduinos work, their applications and to encourage them to work with Arduinos in their spare time.

Outline:
The workshops are mainly targeted to Year 1, Year 2, Intercalated BSc Medicine students and any interested ICBE member in learning more about Arduinos and their basic applications.

These sessions are facilitated by Departmental Technical staff, and organised by the Bioengineering Society with support of a recent intern at Arduino.
The workshops are broken down into 8 Sessions, and will allow 15 groups of students to work in pairs in the lab where the Sessions are run. The content covered in all the Sessions will comprise the Scheme of Work, and each session will have a Lesson Plan. Each Lesson Plan will be provided on the day of the lab, and the registered students will get to work in the lab. The Lesson Plan will also be available online (Facebook - other media to be sought for others for which FB is not accessible) for everyone else to access and to practice on their spare time. Each Lesson Plan will be prepared by the Instructors, where agreed, and will comprise of Core and Extra tasks. At the end of the Workshops, older students will be invited to showcase their projects that may have used Arduinos to inspire younger students or new Arduino users. Any and all participants (in or outside the lab) will be encouraged to make something with their Arduinos, and having done so, they will enter a raffle for a prize. Moreover, the students will be given refreshments (soft drinks and light snacks for a break at the middle of the session)

Department approval:
We have obtained written (emailed) Departmental approval (From Deputy Head of Department of Bioengineering) to run these workshops in a Department electronics laboratory, and have risk-assessed the workshops by the Electronics Lab Technician who is running the workshops.

Expected outcomes:
Outcomes for participants: Participants in the live workshops and students using the Lesson Plans outside of the workshops will learn of the basic applications of Arduinos. We strongly believe that following this, students would be more comfortable to build upon their acquired knowledge further, leading to a greater appreciation of Arduinos and potentially encourage students to use them in university project work or personal projects. We are also encouraging participants to develop their team-working skills in a technical field, as participants will work in pairs.

For students using the Lesson Plans outside the workshops, a system will be considered to be set up wherein students can borrow equipment and return them by a specified date/time.

Outcomes for organisers: ICBE plans to organise a large hackathon again in the Spring Term, and these workshops aim to lead up to that event by providing the opportunity to develop technical experience for potential participants, following feedback from the inaugural hackathon. To continue from the aspect of the Bioengineering Society, we also are learning about how to organise technical events, requiring equipment and appropriate venues for use.
Departmental technicians are also in the organising committee, and naturally they are quite keen to support students in their learning of technical skills. It was suggested that if this event proves to be a success and really benefits students, that the Department may consider implementing it further into timetabled workshops, where and when possible.
Another person in the organising committee is a recent intern at Arduino, and through these workshops he is able to pass on the experience that he obtained while working at the company and support students in their learning through the work that he did.

Outcomes for sponsors: Sponsors make the events that we and other DepSocs organise possible through the funding or any other type of support that we receive. We're thankful for that and thus offer to increase their recognition to the participating students and other members.
The immediate and regular contact that our members have is with the Department of Bioengineering and the Bioengineering Society. Therefore, new students may not be wholly aware of the wide range of support that is available to them and the bodies that house it, which include the CGCU and the Faculty of Engineering. Moreover, for any sponsoring companies, we can advertise any recruitment opportunities for students directly to students.

Timeline:

Date & Time	**Detail/Topic (Cumulative hours)**	**Instructors**
Wed, Nov 8th, 12:15PM	Registration Opened	-
Fri, Nov 10th, 12:00PM	Registration Closed	-
1) Mon, Nov. 13, 17:00 - 18:30	Introduction and simple “blink” program: What an Arduino is / Compiling / connecting to PC	P, N
2) Mon, Nov. 20, 17:00 - 18:30	Developing “blink” program into Pulse Width modulation – simple example	P, UTA1+2
3) Mon, Nov. 27, 17:00 - 18:30	Use of “sensors” - a set of various analog sensors available – class rotate around	P, UTA1+2
4) Mon, Dec. 04, 17:00 - 18:30	More use of sensors – including serial stream to PC	P, N, UTA1+2
5) Mon, Dec. 11, 17:00 - 18:30	Intro to stepper motors / other motors / and concept of a “shield"	P, N, UTA1+2
6) Mon, Jan. 22, 17:00 - 18:30	Bluetooth Low Energy – demo and use of library functions	P, N, F, UTA1+2
7) Mon, Jan. 29, 17:00 - 18:30	Digital sensors – examples and use of I2C/ SPI/ UART – talking to such sensors	P, N, F, UTA1+2
8) Mon, Feb. 05, 17:00 - 18:30	Freeform – attendee’s can develop own ideas and some serious demos from previous projects	P, N, F, UTA1+2

P = Paschal Egan, N = Niraj Kanabar (2 lab technicians)
UTA1+2 = To be paid through the Department of Bioengineering. Bioengineering Society to pay back.

Required amenities/items:

1) Equipment
    a) Session 3&4: Sensor kit (x1)
    b) Session 5: Motor Shield (x15)
    c) Session 5: NFC Shield (x3)
    d) Session 6: HM10 Bluetooth module (x15)
    e) Session 7: Digital Temperature Sensor (x15)
2) Refreshments
    a) Soft drinks: Lemonade/Water
    b) Snacks: Crisps, Cheesy-bites, Healthy options (e.g. baby carrots)
3) Prize
    a) To be confirmed, but mosty likely an Arduino kit or a Picoscope

Budget:

	Unit price (excl. VAT)	Unit price (incl. VAT)	Units	BALANCE (GBP)
Fixed Expenditures				
Equipment (Extra)	229.17	275	1	229.17
Final Prize	41.67	50	1	41.67
Variable Expenditures				
UTAs (2)	14.14		21	296.94
Light Snacks	8.33	10	8	66.67
		TOTAL EXPENDITURE (£)		**634.44**
Variable Income				
Attendee	4.17	5	30	125.00
Fixed Income (Budget)				
Equipment (ICBE Budget)	208.33	250	1	208.33
		TOTAL INCOME (£)		**333.33**
		TOTAL (£)		**-301.11**

Amount requested:

With the budget above, **we request a grant of £300.00**, which will be largely used for the purchase of more equipment for the workshops, and the remaining for smooth running of each individual event.

Should you have any additional questions or require further clarification, please contact us through bgsoc@ic.ac.uk.