

AMGS Cross Mentoring Research Activity 2017-2018

Syllabus

I. Mentor

1. Personal Information

Name	Dr. Jimmy K.Y. WONG
Mobile Number	852-90967972
School or Institute	Hong Kong NGCA Science Innovation Centre
E-mail	drjwong@newgen.org.hk
Major	Physics (Astronomy, Materials Science)

2. Education

	Year	Name of University	Major	Degree	Nation
Bachelor's degree	85-88	Kings College University of London	Physics	BSc	UK
Master's degree	88-89	Imperial College University of London	Physics	MSc	UK
Doctorate	89-94	Imperial College University of London	Physics	PhD	UK
Dissertation	Silicon-on-insulator (Physics/ Materials Science)				

3. Experiences

Duration	Position	Institute or University
94	Postdoctoral research	Imperial College University of London, UK
95	Postdoctoral research	City University of Hong Kong
1995-2006	Physics teacher	Wong Tai Shan Mem. College, H.K. Diocesan Girls' School, H.K.

2006-present	Centre Director	Hong Kong New Generation Cultural Association Science Innovation Centre
2007-present	HK Fair Director (Team leader)	Intel International Science & Engineering Fair

4. Honors and Awards

Year	Title	Remarks
July 2011	Hong Kong SAR Government Chief Executive's Commendation for Community Service (Innovation Technology)	These awards are presented annually to outstanding citizens in Hong Kong for their services to society (equivalent to the Queen's Honour's Lists in UK)

5. Professional Societies

- Hong Kong Science & Creativity Society (Chairman, 2002 - present)
- Hong Kong Invention Association (Honorary Adviser, 2010-2014)
- Hong Kong STEM Education Association (Chairman, 2016 – present)

II. Syllabus

1. Course Title & Criteria

Course Title	Invention of machines or tools in assisting the daily lives of physically disabled or elderly people
Criteria	<input type="checkbox"/> Biology & Applied Biology
	<input type="checkbox"/> Chemistry
	<input type="checkbox"/> Green Energy & Environmental Science
	<input type="checkbox"/> Integrated Science
	<input type="checkbox"/> Medicinal Science
	<input type="checkbox"/> Nano Science
	<input type="checkbox"/> Physics
	<input checked="" type="checkbox"/> Others - Engineering/invention

2. Course Objectives & Description

With the world and our human race facing many pressing global issues such as climate changes, energy shortages, clean water shortages, spread of new diseases, ageing population, etc. as scientists and innovators, we need to come up with new and innovative methods or inventions that will help us solve some of these problems.

Being a young budding young scientist on this mentoring program, I challenge you to develop and make a simple, effective and practical invention that will help those in need around you and possibly be extend to solve some of the global problems that are facing us all.

3. Required Textbook or papers

“How to think like Leonardo da Vinci” by Michael Gelb (Thorsons, Harper Collins Publisher 1998)

Websites: Google Patents (inventions and patent)

Facebook Page: Interesting Engineering

READ UNESCO sustainability goals (<https://en.unesco.org/sdgs>)

4. Final Outcome

Mid-term Report	[] Due date:
Final Report	[] Due date: March 27, 2018
Research Article for APEC Youth Scientist Journal	[X] Due date : May 2018

5. Schedule

Week	Topics and Activities	Assignments & Other Instructions
Week 1	Understanding SCAMPER and patents	Read up books or websites on these topics
Week 2	Search for problems faced by disabled or elderly people	See from news, websites or simply look around the around you
Week 3	Understanding a particular problem and why existing solution cannot solve their problem effective or at all.	Read up and investigate or interview the user on their problem
Week 4	Use SCAMPER to start designing a solution	Draw sketches and think about what materials are needed
Week 5	Start constructing the design. If the problem can be solved using a computer software or mobile APP, start writing the program.	Search for or buy materials (try not to buy expensive parts, use what you have available at home or school. Reuse old materials is best)
Week 6	Continue to build or construct your design or model.	Test your design at different stages of your work
Week 7	You should by now have a first prototype of your design ready	Make modification and fine tuning
Week 8	Test your design or invention by the end user.	Make modification and fine tuning
Week 9	Report and user manual writing	You should write a report on the whole process of your work and write a simple user

		manual for those will use your product
Week 10	Research Article Writing for APEC Youth Scientist Journal	
Week 11~15	Research Article Writing for APEC Youth Scientist Journal	
May 2018	Mentee should submit their research article to AMGS admin. team	