

WORLDWIDE PERSPECTIVES OF ADAPTING ENGINEERING EDUCATION TO CHANGE



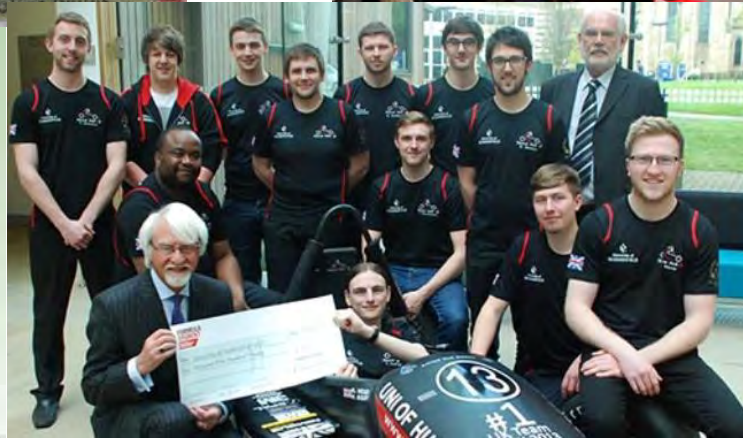
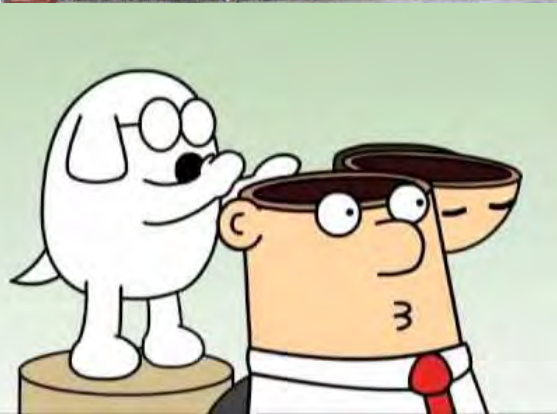
In
2002

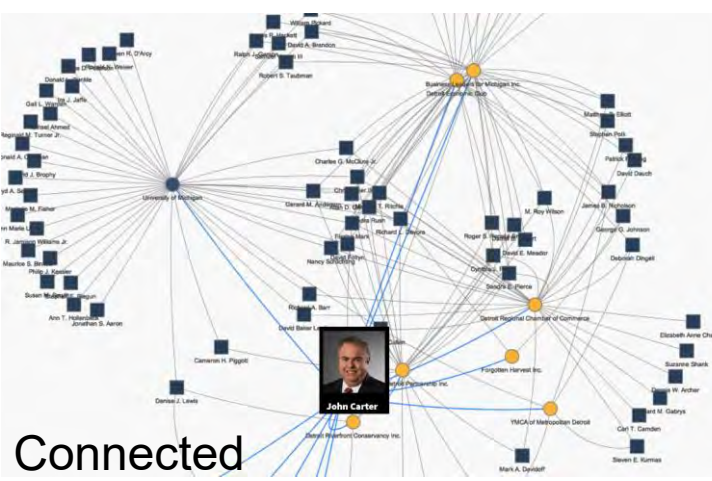
A/Prof Bill
McBride
Assistant Dean
Education

Google
Noun
Not
Verb



Learning 2002





Augmented Reality –
Always

In
2030

Bill ≠ ADE @
UoN

Micro
Credentials



AND
or
OR



OR



Multiple Degrees
Req

Learning 2030

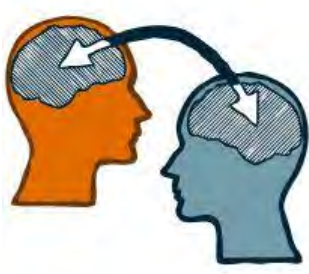
Downloading
how to fly a
Helicopter



What 'Value Add' do we (Unis/Academics)
provide

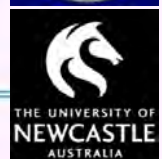
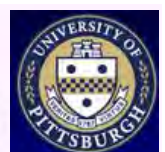


2030



Each bespoke

Bachelor of Mechanical Engineering

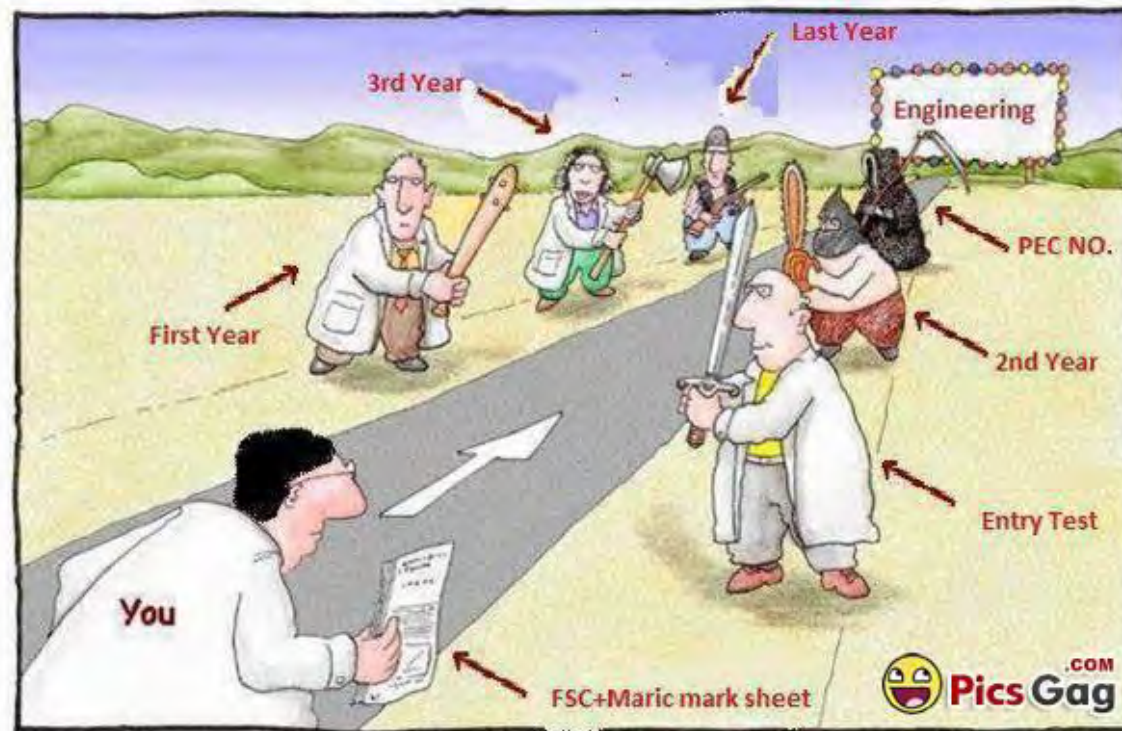


Academics are no longer the owners of Knowledge





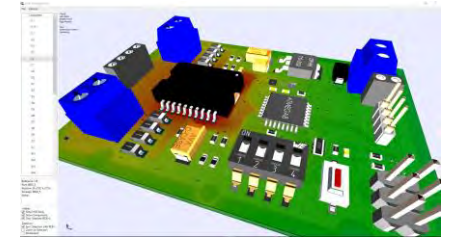
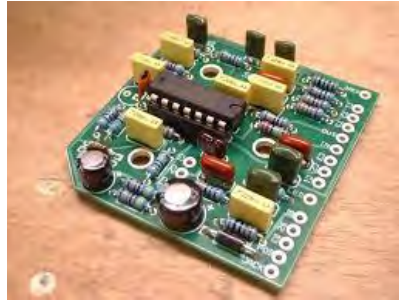
2030 What Role for Us ?



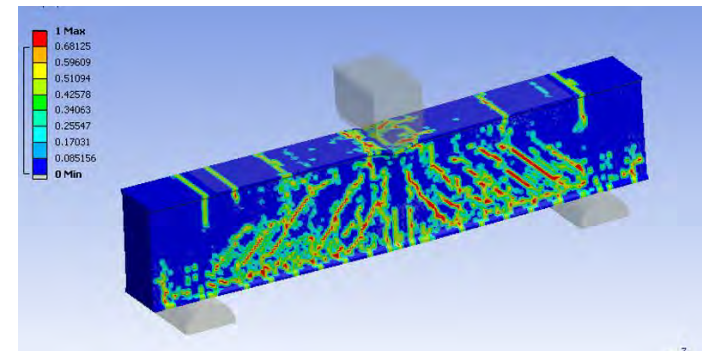
The 'Campus' - 2030



What '*makes*' it Engineering



Does Real become Simulated

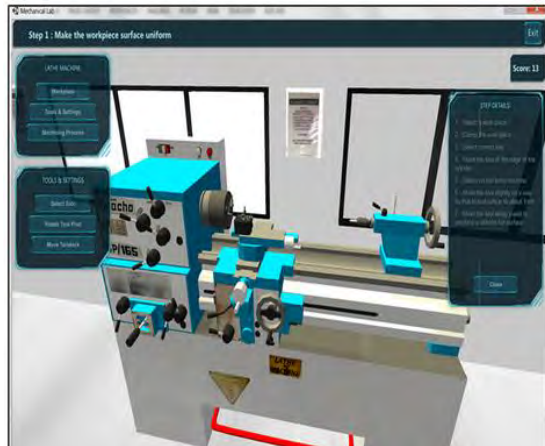


The 'Campus' - 2030

What '***makes***' it Engineering

Augmented V Remote
Simulation V Real

Value of reality?

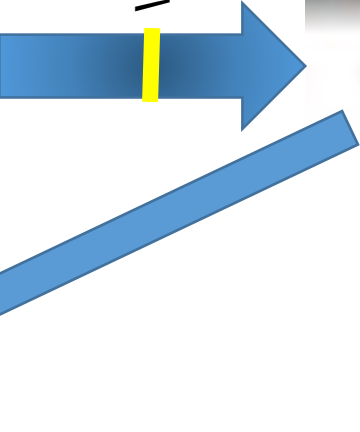


Where are we

KEMP – Nil change > 40 years



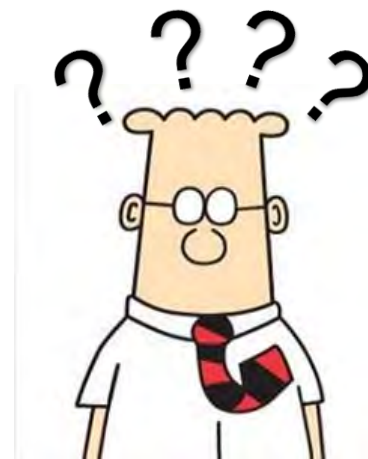
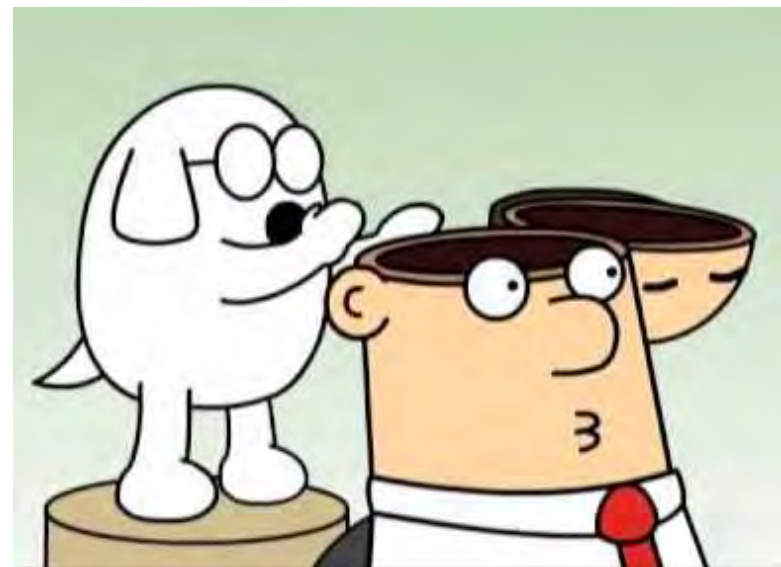
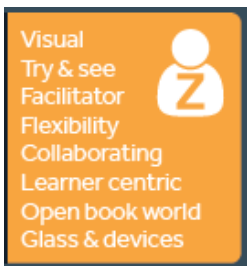
We are here



> % 'Save the World' Students
Need to attract more StWS



Challenges



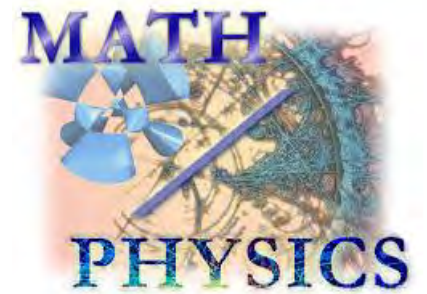
A



Need change of
community



B



U.Newcastle 2013 = “1965 Stanford”

Year 1	GENG1803 Introduction to Engineering	MATH1110 Mathematics for Engineering, Science and Technology 1	Programming 1	Physics	MATH1120 Mathematics for Engineering, Science and Technology 2	Electrical Engineering 1	Mechanical Drawing and production	Introduction to Engineering Mechanics
Year 2	Engineering Mechanics	MATH2310 Engineering Calculus	Mechanical Design 1	Materials Science 1	Dynamics of Machines	Computations 2	Mechatronics 1	<u>ThermoFluid</u>
Year 3	Philosophy	Heat Transfer	Materials Science 2	Materials Science 2	Mechanics of Solids	Mechanical Design 2	FEA	Directed
Year 4	GENG3830 – Project Management	Automatic Control	Directed	Engineering Project A	Project B 20 units		ELECTIVE	ELECTIVE

Our Vision U. Newcastle 2017

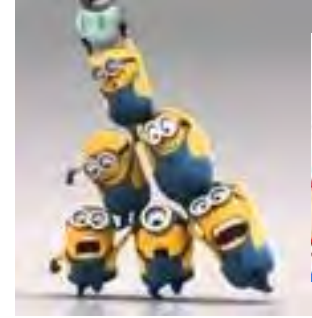
Watch the first
step



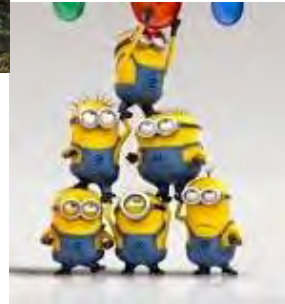
- 4 'Professional Practice' courses
- ENGG1500 – Doing things
 - ENGG2500 – Save the World
 - ENGG3500 – By Practitioners
 - ENGG4500 – Complexity in Eng

	Semester 1				Semester 2			
Year 1	ENGG1500 Introduction to Professional Engineering	MATH1110 Mathematics for Engineering 1	Programming 1	Physics	MATH1120 Mathematics for Engineering 2	Electrical Engineering 1	Mechanical Drawing and production	Engineering Mechanics
Year 2	ENGG2500 Sustainable Engineering	MATH2310 Engineering Calculus	Mechanical Design 1	Dynamics of Machines	Materials Science 1	Computations 2	Solid Mechanical 1	Fluid Mechanics
Year 3	ENGG3500 Managing Engineering Projects	Mechanical Design 2	Materials Science 2	Heat Transfer	Thermodynamics	Modelling and Control	Fluids Mechanics 2 and CFD	ELECTIVE PATHWAY
Year 4	ENGG4500 Engineering Complexity	Solid Mechanics 2 and FEA	ELECTIVE PATHWAY	Experimental Methods & Engineering Project A	Project B 20 units		ELECTIVE PATHWAY	ELECTIVE PATHWAY

ENGG1500
Introduction to
Professional
Engineering



ENGG2500
Sustainable
Engineering










ENGG3500
Managing
Engineering
Projects



ENGG4500
Engineering
Complexity



Elective Pathways

-  [Science](#) 633.1 KB
Aquatic Environments, Chemistry, Earth Science, Biology and Sustainability.
-  [Mathematics](#) 552.5 KB
Discrete Modelling, Signal Processing, Differential Equations and Operations Research.
-  [Humanities](#) 614.5 KB
History, Language, Philosophy, Sociology and Anthropology.
-  [Health](#) 528.3 KB
Biomedicine.
-  [Engineering](#) 877.0 KB
Introductory and advanced topics in multiple engineering disciplines.
-  [Creative Industries](#) 520.3 KB
Industrial Design, Communication and Media.
-  [Business and Legal Studies](#) 623.1 KB
Pathways in Accounting, Finance, Entrepreneurship, Leadership and Marketing.

Or Anything

Elective Pathways in Business and Legal Studies
Accounting
 Economics
 Entrepreneurship
 Finance
 Governance, Policy and Political Economy
 Human Resource Management
 Innovation
 International Business
 Leadership
 Legal Studies
 Marketing

Innovation

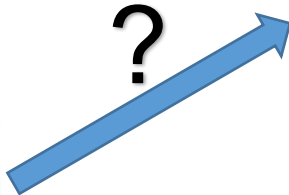
Compulsory courses:

MNGT1002	Introduction to Entrepreneurship and Innovation
MNGT2003	Entrepreneurial and Innovation Diversity
MNGT2004	Managing Innovation
MNGT3008	Advanced Innovation Management

Assumed knowledge:

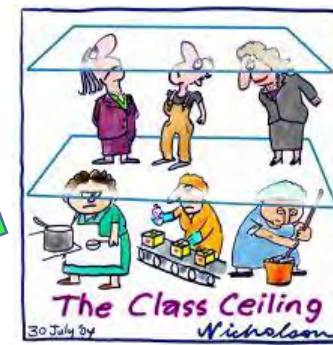
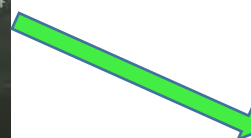
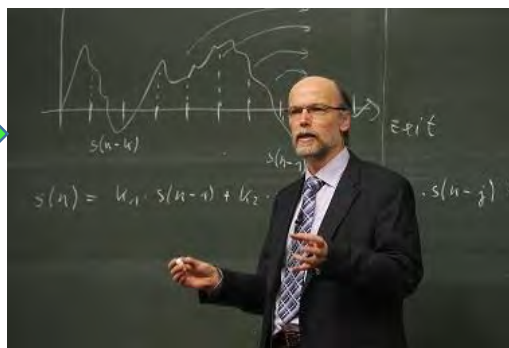
- MNGT2003 requires MNGT1002
- MNGT2004 requires MNGT1002
- MNGT3008 requires MNGT2003

U. Newcastle 2017 → 2030



Existing Micro Credentials	
	SKILLS & EXPERTISE
Most endorsed for...	
36	Extra Long Lunch Breaks
24	Napping
18	Stringing Together Buzzwords

Challenges



Challenges



\$?



Luck? Luck is my second name!
Mind you, my first name is Bad.
-Rincewind

**NEVER STOP
DOING YOUR BEST
JUST BECAUSE
SOMEONE DOESN'T
GIVE YOU CREDIT.**

quoteslife101.net