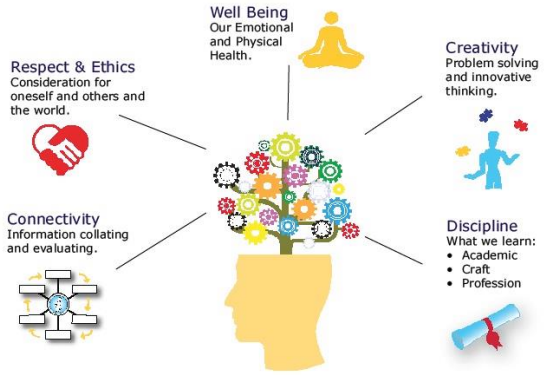
Taklimat Semakan dan Hala Tuju Kurikulum Abad 21

Tarikh: 11 Ogos 2016 (Khamis)
Masa: 2.00 petang – 3.30 petang
Tempat: Dewan Seminar, Menara Razak, UTMKL

Tarikh: 14 Ogos 2016 (Ahad)
Masa: 2.30 petang – 4.00 petang
Tempat: Dewan Senat, UTMJB



Agenda Taklimat

1. Latar Belakang
2. Taklimat ringkas Bengkel Semakan dan Halatuju Kurikulum
3. Keperluan semakan kurikulum
   - Senario Global:
     - ❖ “Lesson learned from global connection and innovation”
     - ❖ Robots replacing graduates
     - ❖ 21st Century Curriculum
   - Senario Nasional:
     - ❖ Penawaran dan permintaan gunatenaga Malaysia
   - Program Prasiswazah dan pascasiswazah UTM

Pengumuman:

1. Bahan-bahan taklimat boleh dimuatturun di link: http://www.utm.my/office-dvcai/bahan-rujukan-halatuju-kurikulum/
2. Taklimat secara live streaming di UTM WebTV http://www.utm.my/tv/
3. Taklimat dirakam dan boleh dicapai bila-bila masa. Link akan dimasukkan dalam website bersama-sama bahan-bahan taklimat lain.

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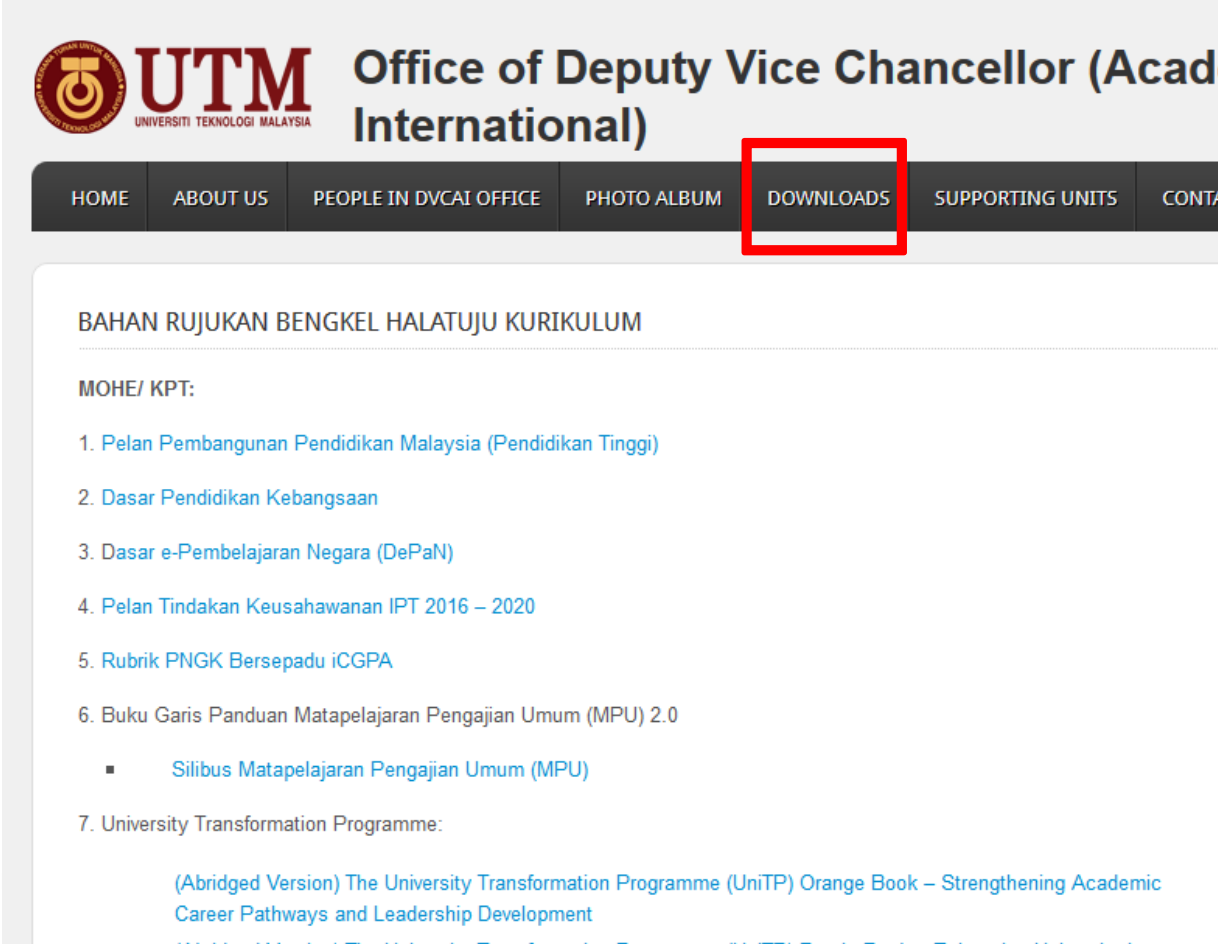
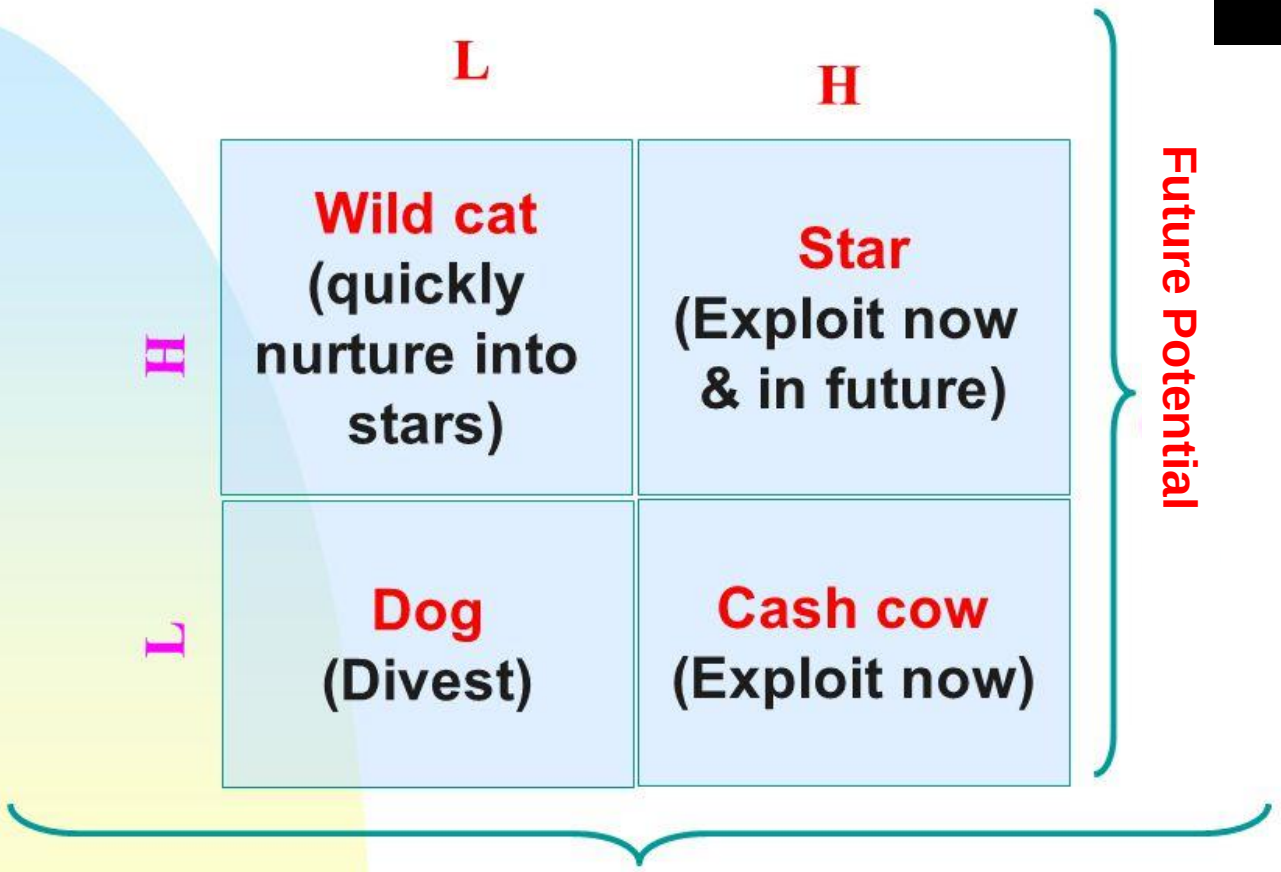


Aktiviti Semakan Kurikulum	Tarikh
Taklimat Halatuju Kurikulum Abad 21 1. Latar Belakang 2. Keperluan semakan kurikulum • Senario Global: ❖ "Lesson learned from global connection and innovation" ❖ 21st Century Curriculum • Senario Nasional: ❖ Penawaran dan permintaan gunatenaga Malaysia • Program Prasiswazah dan pascasiswazah UTM 3. Taklimat ringkas Bengkel Semakan dan Halatuju Kurikulum	11 Ogos 2016 (UTMKL) 2 ptg 14 Ogos 2016 (UTMJB) 2 ptg (Dewan Senat)
Bengkel Semakan dan Halatuju Kurikulum Abad 21 di Peringkat Fakulti Tujuan: 1) Menilai status semasa program akademik dan di masa hadapan dengan menggunakan BCG Matriks 2) Mengenalpasti bidang tujahan program	15 – 20 Ogos 2016 (mengikut perancangan fakulti)

BCG Matrix on Academic Program Portfolio Model

Indikator:
- Permohonan
- *Intake*
- Graduan
- *Attrition rate*
- Kebolehpasaran graduan



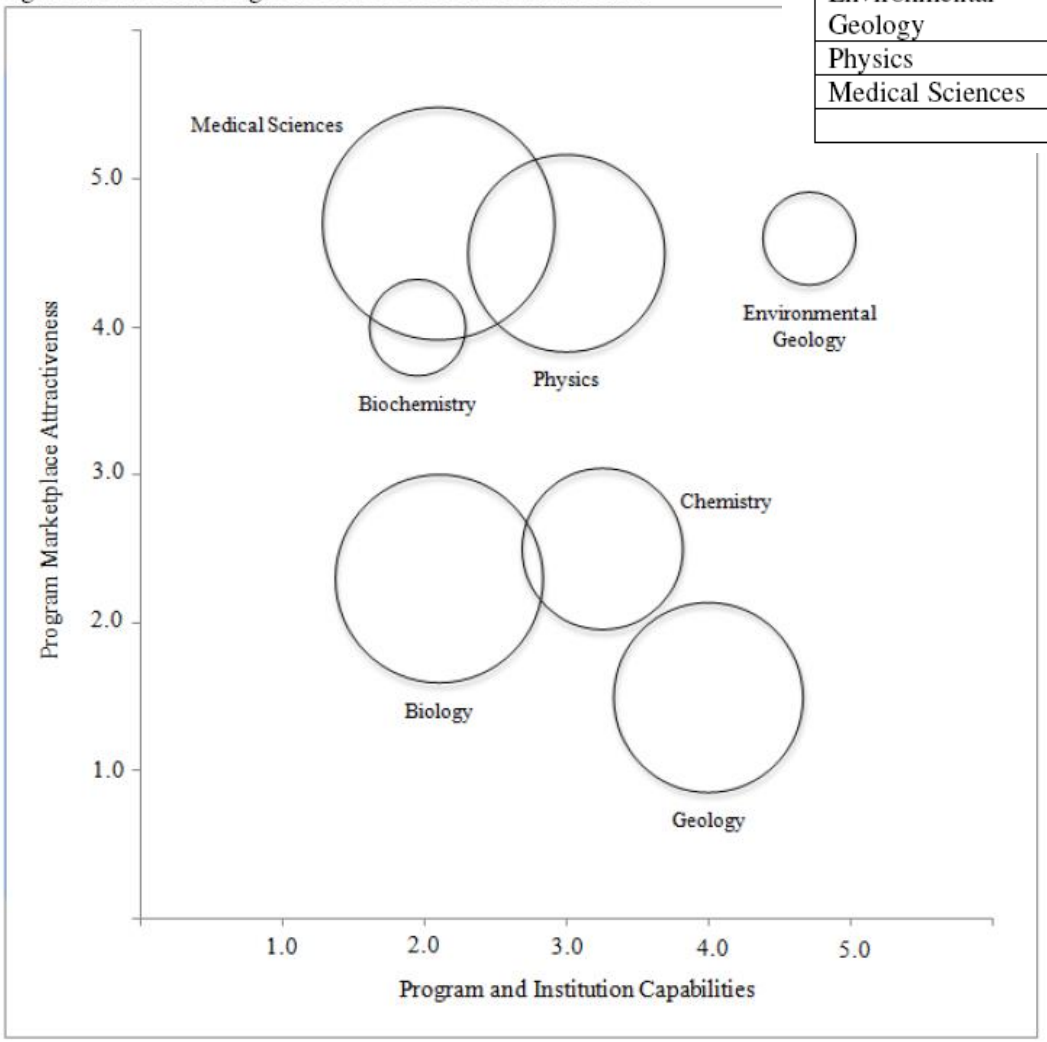
58

Contoh:

Table 8: APPM Metrics for Graduate Programs in the Sciences

College of Arts and Sciences Science Programs	Composite Score for Program and Institution Capabilities	Composite Score for Program Marketplace Attractiveness	Relative Size of Academic Program Based on Number of Students
Chemistry	3.25	2.50	0.120
Biology	2.10	2.30	0.200
Biochemistry	1.95	4.00	0.043
Geology	4.00	1.50	0.167
Environmental Geology	4.70	4.60	0.04
Physics	3.00	4.50	0.18
Medical Sciences	2.10	4.70	0.25
			1.000

Figure 1: Academic Program Portfolio Model for the Sciences



Rujukan:

1. http://www.aabri.com/manuscripts/11745.pdf

BAHAGIAN PENGURUSAN PEMBANGUNAN AKADEMIK (BPPA)

UTM UNIVERSITI TEKNOLOGI MALAYSIA

TAKLIMAT PENAWARAN & PERMINTAAN GUNA TENAGA

KAJIAN PASARAN

Universiti awam hendaklah membuat kajian pasaran secara menyeluruh bagi memastikan program akademik yang ingin ditawarkan mempunyai permintaan daripada pihak industri.

KAJIAN PASARAN MEMERLUKAN:

Perbandingan data keperluan guna tenaga melalui LFS, ILMIA dan JobStreet

Rujukan melalui Pelan Pendidikan Tinggi, Rancangan Malaysia semasa, Pelan Industri, NKRA

Size sample yang signifikan dan pemegang taruh yang pelbagai serta menyeluruh

PERKARA-PERKARA LAIN

Universiti awam perlu mempertimbangkan untuk hanya menawarkan program yang berdaya saing dan relevan serta mampu meningkatkan keboleh pasaran graduan.

- Bidang Tujahan
- Pertindanan program
- GE Fakulti dan pelajar - GE perlu ditingkatkan
- Kelulusan LPU - bagi memastikan Fakulti tersebut mampu menawarkan program akademik berkenaan
- Tempoh sah laku kelulusan JKPT adalah 2 tahun bermula dari tarikh kelulusan YB Menteri Pendidikan Tinggi

Rujukan:

BAHAGIAN PENGURUSAN PEMBANGUNAN AKADEMIK (BPPA)

Aktiviti Semakan Kurikulum	Tarikh
Bengkel Semakan dan Halatuju Kurikulum Abad 21 di Peringkat Universiti **Tujuan:** **1) Pembentangan status** semasa program akademik dan di masa hadapan dengan menggunakan BCG Matriks **2) Mencadangkan bidang tujahan UTM** dan mengikut kluster menggunakan BCG Matriks **Siri I (Mengikut Kluster)** - Kejuruteraan - Sains & Teknologi - Sains Sosial **Siri II (UTM)** **Agenda:** - Perbincangan: 1) Senario Global • *Megatrends in Education* (Slide Prof Jane, 21st Century) 2) Senario Nasional • Keperluan sumber manusia negara (Slide gunatenaga manusia KPT 29 Jul 2016, NKEAS) 3) Senario UTM • Analisa terhadap program sedia ada ❖ Permohonan dan intake (tren) ❖ Graduan ❖ Attrition rate ❖ Kebolehpasaran graduan - Pembentangan status semasa program akademik fakulti dan halatuju dengan menggunakan BCG Matriks - Perbincangan cadangan bidang tujahan UTM dan mengikut kluster menggunakan BCG Matriks	**21 Ogos (Kluster) – Siri I** **25 Ogos 2016 (UTM) – Siri II**

Bengkel Semakan dan Halatuju Kurikulum Abad 21 di Peringkat Universiti

Siri I (Mengikut Kluster)
Tarikh: 21 Ogos 2016
Masa: 8.30 pagi – 5.00 petang
Tempat: UTM JB (akan dimaklumkan)

Kluster Kejuruteraan	Kluster Sains & Teknologi	Kluster Sains Sosial
Ketua: Prof. Dr. Mohd Zaki Kamsah	Ketua: Prof Dr. Abdul Samad Ismail	Ketua: Prof. Dr. Zaidatun Tasir
Dekan Fakulti Kejuruteraan	Dekan Fakulti Sains & Teknologi	Dekan Fakulti Sains Sosial
Dekan RA		
Timbalan Dekan Fakulti Kejuruteraan	Timbalan Dekan Fakulti Sains & Teknologi	Timbalan Dekan Fakulti Sains Sosial
Pengurus Akademik Pascasiswazah Fakulti Kejuruteraan	Pengurus Akademik Pascasiswazah Fakulti Sains & Teknologi	Pengurus Akademik Pascasiswazah Fakulti Sains Sosial
Timbalan Pendaftar Fakulti Kejuruteraan	Timbalan Pendaftar Fakulti Kejuruteraan	Timbalan Pendaftar Fakulti Sains Sosial
Ahli Jawatankuasa Hala Tuju Kurikulum Abad 21		
Urusetia: En. Asram Sulaiman Pn. Nur Hakimi Karsono	Urusetia: En. Kamsaini Kamaruddin En. Farid Rahmat	Urusetia: En. Baharudin Mastari En. Mohd Zaires Md Daris

Siri II (UTM)
Tarikh: 25 Ogos 2016
Masa: 8.30 pagi – 5.00 petang
Tempat: UTM JB (Bilik Mesyuarat 3, SPS)

Peserta Bengkel
Ahli Jawatankuasa Hala Tuju Kurikulum Abad 21
Dekan Fakulti, Sekolah, RA
Timbalan Dekan (Akademik)
Pengurus Akademik Pascasiswazah

Hasil Mesyuarat Jawatankuasa Hala Tuju
Kurikulum Abad 21 Bil 1/2016 (10 Ogos 2016)

1. Mengadakan sesi taklimat kepada fakulti bagi pelaksanaan semakan kurikulum UTM
2. Fakulti mengadakan bengkel bagi mengenalpasti bidang tujahan dan status semasa program
3. Menggunakan BCG Matriks untuk menilai status semasa program akademik dan di masa hadapan
4. Menyediakan BCG Matriks UTM
5. Membangun Polisi Hala Tuju Kurikulum UTM

Kurikulum Abad 21 sebagai Critical Agenda TNC (A&A) 2015

CRITICAL AGENDA 2

21st Century Curriculum

Inisiatif 1:
Membangunkan kurikulum Abad Ke-21 yang menerajui industri

Inisiatif 2:
Memperkasakan kurikulum melalui semakan semula kursus umum, kursus amali/ makmal dan kursus keusahawanan

PGU

(KFA 1) Merekabentuk dan melaksanakan kurikulum berdasarkan inovasi dan pembelajaran baharu

PPPM (PT)

Lonjakan 1

Graduan Holistik, Keusahawanan dan Seimbang

Pembentukan Jawatankuasa Hala Tuju Kurikulum Abad 21

- Tindakan hasil mesyuarat laporan perkembangan pelaksanaan *Integrated*-CGPA (iCGPA) pada 23 Mei 2016
- Rasionalisasi dan Semakan Hala Tuju Program Akademik – JKTNCRA Bil 50 pada 2 Jun 2016 di UPNM.
- JKTNCA Bil 2/2016 pada 13 Jun 2016 telah meluluskan Jawatankuasa Hala Tuju Kurikulum Abad 21

Terma Rujukan:

1. Membuat semakan terhadap hala tuju kurikulum UTM.
2. Membangunkan dasar/ kerangka kurikulum UTM yang memenuhi kurikulum mengikut keperluan PPPM (PT) dan kurikulum Abad 21.
3. Menentukan komponen utama yang perlu dalam kerangka pembangunan kurikulum UTM.
4. Meningkatkan libatsama industri dalam pembangunan kurikulum UTM supaya memenuhi keperluan pasaran pekerjaan masa depan.
5. Memperkasakan Matapelajaran Pengajian Umum (MPU) supaya lebih generik.
6. Meningkatkan kemahiran bahasa dalam kurikulum UTM.
7. Menyediakan kertas kerja dasar/ kerangka kurikulum untuk meningkatkan kualiti akademik.
8. Membangun polisi kurikulum UTM.

Keahlian:

Pengerusi: Timbalan Naib Canselor (Akademik & Antarabangsa)
Timbalan Pengerusi 1: Dekan Sekolah Pengajian Siswazah
Timbalan Pengerusi 2: Dekan Pengajian Prasiswazah

Ahli:

1. Pengarah Kanan QRiM – Prof. Dr. Yahaya Sam
2. Pengarah CTL – Prof. Madya Ir. Hayati Abdullah
3. Wakil Senat 1: Prof. Dr. Naomie Salim
4. Wakil Senat 2: Prof. Dr. Kamarul Asri Ibrahim
5. Wakil Dekan Kejuruteraan – Prof. Dr. Zainuddin Abdul Manan (FKT)
6. Wakil Dekan Sains & Teknologi 1: Prof. Dr. Abd Samad Hj Ismail (FC)
7. Wakil Dekan Sains & Teknologi 2: Prof. Dr. Sha'ri Mohd Yusof (RS)
8. Wakil Dekan Sains Sosial: Prof. Dr. Baharuddin Aris (FP)
9. Dekan Akademi Bahasa – Prof. Madya Dr. Abdul Halim Abdul Raof
10. Timbalan Dekan (Pembangunan Akademik), UGS – Prof. Madya Dr. Naziha Ahmad Azli
11. Timbalan Dekan (Kursus Ko-Q & Pembelajaran Servis), UGS – Prof. Madya Dr. Mohd Shafry Mohd Rahim
12. Timbalan Dekan (Pembangunan Program dan Hubungan Pelanggan), SPS – Prof. Madya Dr Aminah Mohd Yusof
13. Pengarah UTMTEC – Prof. Dr. Kamariah Ismail
14. Pengarah UTMCC – Prof. Madya Dr. Othman Ibrahim
15. Wakil Pejabat HEMA – Hj. Dahari Derani
16. Wakil TP Sains & Teknologi 1 : Hj. Abdul Razak Abdul Aziz (FS)
17. Wakil TP Sains & Teknologi 2: En. Kamsaini Kamaruddin (FGHT)
18. Wakil TP Sains Sosial: En. Baharuddin Mastari
19. Wakil TP UTM Kuala Lumpur: Pn. Zaharah Ahmad

Keahlian lain yang boleh dijemput dari semasa ke semasa oleh Jawatankuasa mengikut keperluan:

1. Ahli industri
2. Alumni

Urusetia:

1. Pejabat TNC (A&A) – Cik Najmah Shamsuddin
2. Pejabat SPS – Encik Asram Sulaiman, Puan Nur Hakimi Karsono
3. Pejabat UGS – Puan Safriza Sabjah

Tempoh:

Satu tahun (20 Jun 2016 hingga 19 Jun 2017)

Sumber Rujukan:

1. Pelan Pembangunan Pendidikan Malaysia (Pendidikan Tinggi)
2. Dasar Pendidikan Negara
3. Standard MQA
4. Dasar e-Pembelajaran Negara (DePaN)
5. Pelan Tindakan Keusahawanan IPT 2016 – 2020
6. Buku Garis Panduan Matapelajaran Pengajian Umum (MPU) 2.0
7. Pelan Global UTM II (PGU II)
8. Laporan:
    a. Jawatankuasa Kursus Umum U2 – Penguasaan Kemahiran Insaniah
    b. Jawatankuasa Kursus Umum U3 – Perluasan ilmu pengetahuan bercirikan kemalaysiaan
    c. Jawatankuasa Integrated – CGPA
    d. Semakan Kurikulum (QRiM)
    e. Indeks Kepuasan Majikan (UTMCC)
    f. Indeks Patriotisme dan Perpaduan (HEMA)
    g. Kajian Pengesanan Graduan (Prasiswazah dan Pascasiswazah)
9. Penandaaras kurikulum daripada universiti lain

Universities bring together the social, economic, and intellectual resources with the capacity to generate benefits on a local, national and global scale.

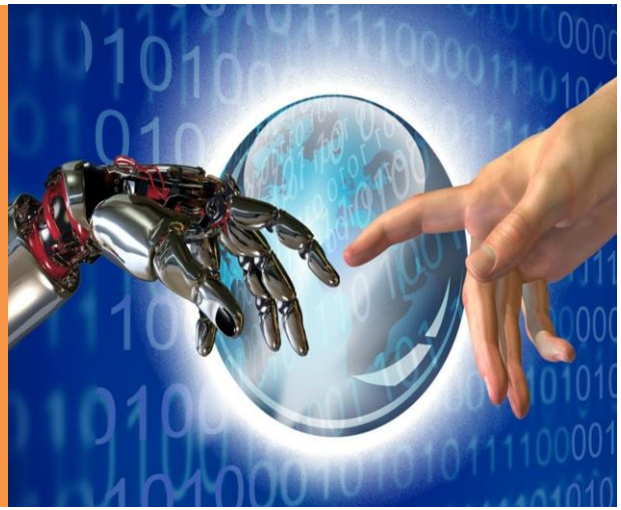
A global knowledge ecosystem

How do we juggle the demands to compete in a crowded and complex global market while collaborating successfully?

Internationalisation is integral to 21st century higher education

We operate in a digitally leveraged and hyper connected world

Global connectivity
Big data
Block chain
Cognitive computing
3D printing
Wearables
Internet of Things
New media



Rujukan:
'Lessons learned from global connection and innovation', Professor Jane den Hollander, President and Vice-Chancellor, Deakin University Australia

MOOCs free us from fixed concepts of meritocratic selection and from preconceived notions of who should go to university and when that might happen… they have the potential to truly democratise education.

MOOCs have been a game changer

Academic partnerships are doing more than ever before

- Preparing global citizens as members of a future workforce
- Bringing multiple voices into the classroom
- Developing the international capacity of staff
- Advancing research by connecting institutions and academics
- Generating revenue through tuition and grants
- Shaping the global system of higher education

Rujukan:
'Lessons learned from global connection and innovation', Professor Jane den Hollander, President and Vice-Chancellor, Deakin University Australia

Building bridges through collaborative research

Collaboration spurs innovation because it brings together groups of people who have different ideas, different approaches, different experiences, different discipline frameworks and different areas of expertise

The barriers to collaboration

Relentless competition for dollars, staff and students

Organisational silos

Need for platforms to share, incubate and action ideas

Preparing the workforce of the future

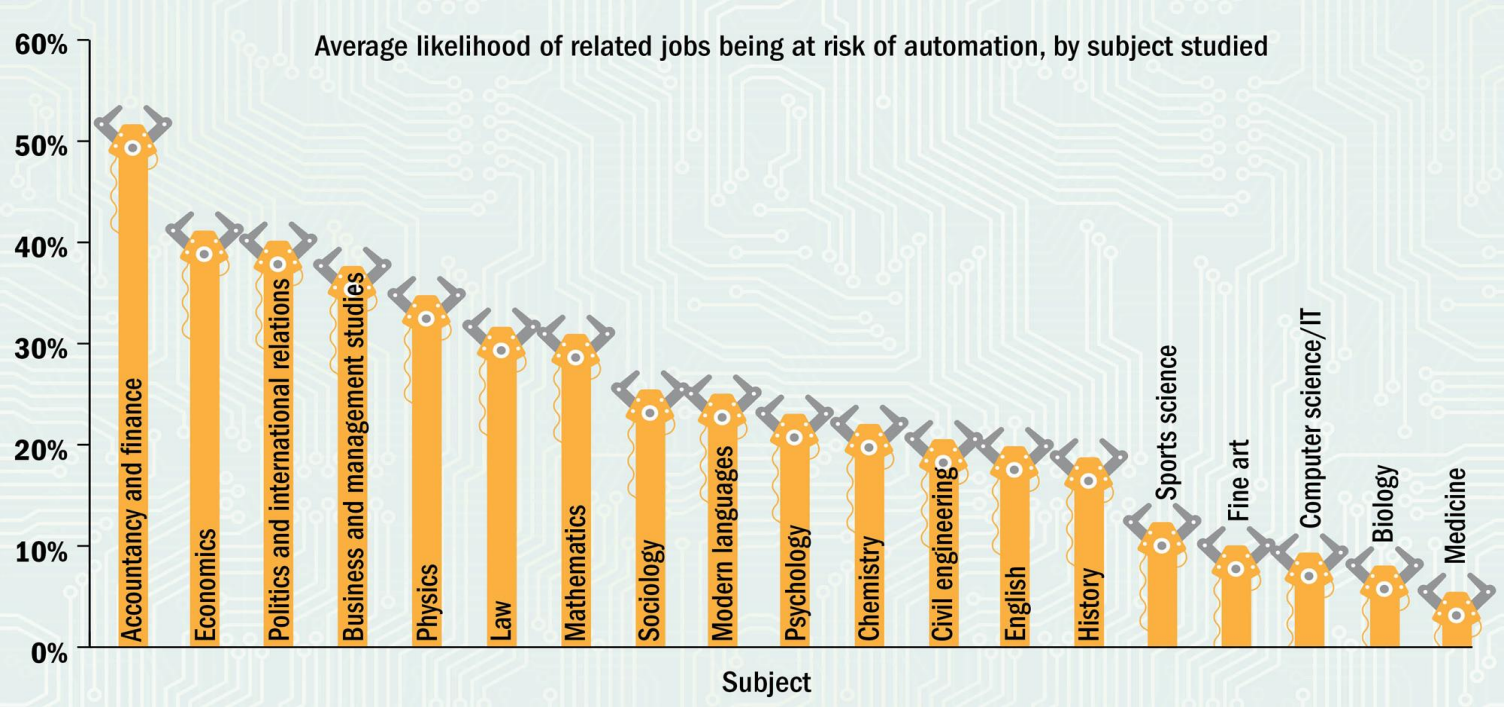
Rujukan:
'Lessons learned from global connection and innovation', Professor Jane den Hollander, President and Vice-Chancellor, Deakin University Australia

Analysis reveals some disciplines could leave graduates at a much greater risk of being replaced by machines in the future

THE used these data (which had been adapted for the UK by the BBC) to see which subjects lead to jobs most in danger of automation, using a database from the Prospects careers website, which lists whether a degree course is "directly related to" or "useful" for a particular job.

The results reveal dramatic differences between subjects. Accountancy and finance is particularly vulnerable because directly related jobs such as accountant, taxation expert and financial technician are judged to have at least a 95 per cent chance of automation.

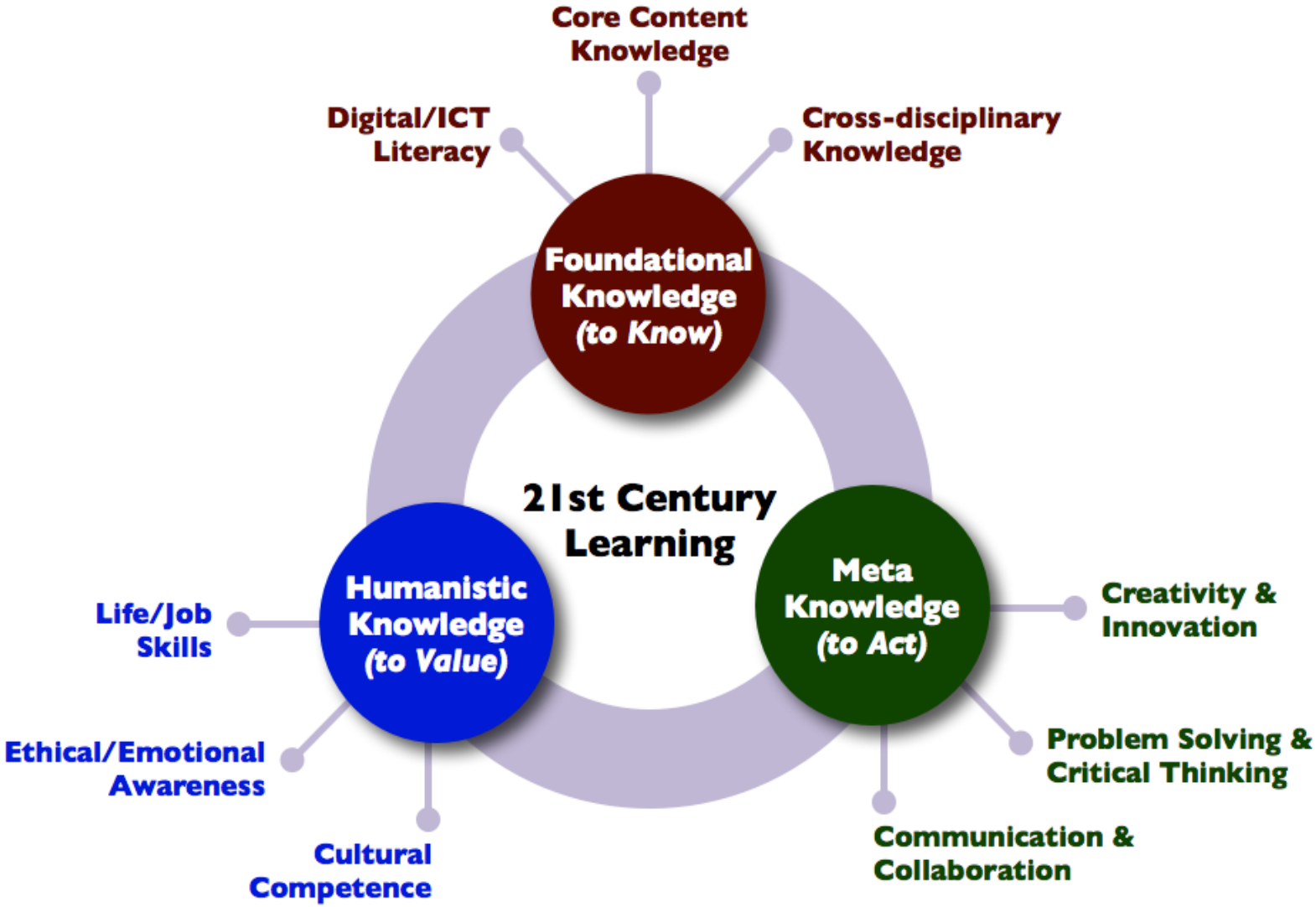
- Times Higher Education News -



Rujukan:
'What should you study to stop robots stealing your job? Times Higher Education News, April 13, 2016

The 21st C Learner is . . .

innovative ● entrepreneurial ● global



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

NKEAs

The jobs most in-demand are in the semi-skilled trade workers categories

kill Level	Jobs	Level of Demand
Skilled	Health & Safety Officer	High
Skilled	Mechanical Engineer	High
Skilled	Electrical Engineer	High
Skilled	Tour Operator	Medium
Skilled	Account Executive	Medium
Semi-Skilled	Electrician	High
Semi-Skilled	Tour Guide	High
Semi-Skilled	Technician: QC, Process, Instruments	High
Semi-Skilled	Mechanics: Machine	High
Semi-Skilled	Mechanics: Heavy Vehicles	High
Semi-Skilled	Crane Operator: Logistics & Construction	High
Semi-Skilled	Machinists: Lathe and CNC	High
Semi-Skilled	Motor Grader Operator	Medium
Semi-Skilled	Welders/Fitters	Medium

Rujukan:

Source: Surveys & In Depth Interviews

Feedback from Industries

Some of the challenges faced by the employers

"Supply of engineering graduates with relevant professional registration is limited"

"There is no clustering of talent pool due to the wide geographical range of the state"

"Fast introduction of new technologies, not many workers are skilled at that field"

"Applicants prefer to work in major towns than in remote areas. Quality of life is an important factor to attract & retain talents"

"The industry is still young, the talent pool available do not have enough experience"

"More recognition of prior learning is needed especially for trade workers"

Source: In Depth Interviews

Rujukan:

Feedback from IHLs

Some of the challenges faced by the IHLs

"It is a challenge for us to keep up with the latest technologies and equipment emerging in the industry. We need better support, facility and equipment sharing from the industries"

"Two way communications between us and the industries need to be stronger so that we match their needs"

"Institutions need to train the teachers as sometimes they lack experience and expertise in teaching curriculum that matters to the industry"

"More placements offers from the industries are needed so that the students will have the opportunities to experience the market first hand"

Source: In Depth Interviews

Rujukan:

Key findings

1. Talent growth
2. Future talent needs
3. Challenges for sector for recruiting, attracting and retaining talent

Rujukan:

Communications sector: Key demand perspectives

1. Talent growth

♦ Growth Drivers: Demand for High Speed Broad Band (HSBB) and Fibre To The Home (FTTH) deployment. Emerging technologies like Internet of Things (IoT), Internet of Everything (IoE), cloud and data analytics, heterogeneous network (Het Net) convergence and content development

♦ Growth (4%) uneven: e.g. faster in HSBB & FTTH from smaller base but slower in mobile penetration already at 140%

♦ Wireless (4G,5G, LTE): reskilling rather than new jobs created, other areas will see new jobs but not substantial.

LTE= long term evolution

Rujukan:

Communications sector: Key demand perspectives

2. Future talent needs

♦ Need for optical fibre certified technicians and those with technical skills for LTE capability, infrastructure and network optimisation.

♦ Skills in network strategy and planning.

♦ Big data analytics will increase demand for technical competencies in data warehousing solutions, data mining etc. MDEC: currently 80 data scientist whereas 1,500 needed by 2020.

Rujukan:

Communications sector: Key demand perspectives

3. Challenges: recruiting, attracting and retaining talent

- Responses per vacancy more exceed number of positions. Ample number of applicants to choose from.
- Technical skills lacking but can be enhanced through on the job training and therefore focus on candidates with the right attitude and good communications skills.
- Access to training programmes, upskilling and those that promote continuous learning among top reasons for retaining employees. Also exposure to upcoming technology through attendance at conferences/trade shows.

Rujukan:

Communications sector: Key supply perspectives

1. Student trends
2. Effectiveness of Telecommunications programmes
3. Industry involvement
4. Level of innovation among students

Rujukan:

Communications sector: Key supply perspectives

1. Student trends

♦ Decline in engineering student intake, especially in E&E engineering field. Secondary school pool of science stream students produced around 30% and a low percentage of such students pursuing engineering related field.

♦ Parents role in influencing students' decision on field of study, where engineering perceived to be very technical and unattractive versus business or medicine.

♦ Negative CAGR of 4% and 11% student intake in IT and Engineering 2010-3 in both private and polytechnic/community college, but steady increase in IT courses in public universities.

♦ Telecommunications companies also hiring graduates with background in Finance, Law, Marketing and even Actuarial Science.

♦ In addition to technical capabilities great weight given to attitude and communications skills.

Rujukan:

Communications sector: Key supply perspectives

2. Effectiveness of Telecommunications programmes

♦ Introducing programmes that combine IT or Telecommunications subjects with business and regulatory contents.

♦ Institutions face challenges in providing students with practical learning experiences.

♦ Insufficiency of lab equipment and lack of exposure to newer and emerging technologies.

♦ Including programmes to develop soft skills such as communication skills, English language proficiency, leadership skills, etc.

♦ Trendings towards need for graduates to venture into entrepreneurship through platform developments – where basic skills required are data analytics and creativity – but education institutions, in general, are not up to speed in catering for this.

Rujukan:

Communications sector: Key supply perspectives

3. Industry involvement

♦ Institutions review course syllabus every 2 years. Review panel from industry, alumni network and external local and international reviewers to ensure alignment to industry requirements and to benchmark against global standards.

♦ Institutions looking for sustained support from industry instructors to participate in lecture series or specific subject matters. Polytechnics and community colleges has the least instructor participation of industry players.

♦ Suggestions that philanthropic mind-set lacking from industry players.

♦ Need industry support for research and development to introduce and enhance use of new technologies.

♦ Greater access to industrial training and attachments effective in exposing students to the working world and impacts the learning experience positively.

Rujukan:

Communications sector: Key supply perspectives

4. Innovation among students

♦ Institutions introducing a blended approach (a combination of classroom methods and computer-based/mediated activities) to promote innovative mind-set among students.

♦ Students encouraged to work in a team, develop out-of-the-box solutions and ultimately articulate their ideas during class presentations.

♦ Problem-Based Learning (PBL) questions incorporated in syllabus to harness creativity for deriving solution and problem-solving.

♦ Stakeholders feel that more effort required at foundation levels (primary and secondary) to inculcate an innovative mind-set.

♦ Greater access to industrial training and attachments effective in exposing students to the working world and impacts the learning experience positively.

Rujukan:

Program Prasiswazah dan pascasiswazah UTM

Peringkat Pengajian	Kerja Kursus	Mod Campuran	Penyelidikan	Jumlah
Diploma	16	0	0	**16**
Sarjana Muda	55	0	0	**55**
Sarjana*	70	29	70	**169**
PhD*	0	5	57	**62**
Jumlah	**141**	**34**	**127**	**302**

Nota:
* Bilangan mengikut bidang pengkhususan (SPS)

Isu:
1. Bilangan program yang banyak
2. Terdapat program dengan enrolmen yang kecil
3. Mensasarkan 100% program disemak semula dan menggunapakai kurikulum Abad 21 (KPI UGS, SPS)

Cadangan:
1. Semakan semula/ rasionalisasi program sedia ada

Indikator Semakan Program

- Permohonan
- *Intake*
- Graduan
- *Attrition rate*
- Kebolehpasaran graduan

Bilangan program UTM

Fakulti	Diploma	Sarjana Muda	Sarjana			PhD		Jumlah
			Kerja Kursus	Mod Campuran	Penyelidikan	Mod Campuran	Penyelidikan	
FP		6	12	12	15		15	61
FKT		5	9	5	8	1	8	36
FKA		1	9		14	1	1	26
FGHT		4	6		6		7	23
FAB		5	5		4		4	18
FS		6		5	3		3	17
UTMSpace	16							16
FKM		7	6		2		1	16
UTM Razak		1	8		2	1	1	13
FBME		4	1	1	3		3	12
FC		5	2	2	1		2	12
FKE		3	4		1		1	10
FM		5		2	2		1	10
MJIIT		3	2	2	1		1	9
UTM AIS			4		1	1	1	7
UTM Perdana			1		2		2	5
FTI					2		2	4
SPS					2		2	4
IBS			1			1	1	3
ABahasa					1		1	2
Jumlah	16	**55**	**70**	**29**	**70**	**5**	**57**	**302**

Terimakasih!

Pejabat Timbalan Naib Canselor (Akademik & Antarabangsa) | 11 Ogos 2016