

**Panel on Commerce and Industry  
Meeting on 17 August 2021**

**Responses of the Government**

**(a) Reindustrialisation and Technology Training Programme (RTTP)**

**(i) Information on the number of registered public courses, tailor-made courses and funded trainees related to "Industry 4.0" ("i4.0") as at end July 2021; and the average number of trainees in each approved public course under the RTTP, and whether there is a minimum requirement on the number of trainees for those courses.**

- As at end July 2021, the number of public courses and tailor-made courses related to "i4.0" under RTTP, and the number of funded trainees are tabulated below -

	<b>Registered public courses related to "i4.0"</b>	<b>Tailor-made courses related to "i4.0"</b>
<b>Number of Courses</b>	1 282	34
<b>Number of Funded Trainees</b>	4 259	423

- RTTP does not set a limit on the number of trainees of registered public courses. In addition to funded staff of enterprises, courses under RTTP are also open to members of the public who have not applied for RTTP funding. As at end July 2021, the total number of registered public courses under RTTP was 1 681, with a total of 4 761 funded trainees. We do not keep statistics on the participation of non-RTTP funded persons in the relevant public courses and therefore cannot provide information on the average number of trainees.

**(ii) Number of trainees funded by RTTP (as at end July 2021)**

- Since the launch of RTTP in August 2018 up to the end July 2021, RTTP has funded 5 473 staff of local enterprises to receive technology training.

**(b) The progress of commercialisation of research and development (“R&D”) outcomes (including the commercialisation income received) by the R&D Centres established by the Government**

- The R&D Centres play an important role in creating a vibrant innovation and technology (“I&T”) ecosystem. They act as a focal point for technology collaboration among the Government, industry, academia and research sectors. The R&D Centres not only contribute to the applied research in key areas, but also work closely with the industry to encourage private investment in R&D in Hong Kong and drive the commercialisation of R&D results.
- As the R&D Centres are platforms for coordinating applied research and facilitating technology transfer to the industry, it is very important to gauge the level of support of the industry in their work. However, it is worth noting that in addition to conducting applied R&D in key areas, the R&D Centres also play an ancillary and platform role. For example, some of the research projects of the R&D Centres are relatively upstream (exploratory in nature) and midstream R&D. There is still a long way before reaching the commercialisation phase and it will take time to achieve outcomes.
- In 2019-20 and 2020-21, the industry income of the R&D Centres, which mainly covers the industry contribution for their R&D projects and commercialisation income, is as follows -

<b>Industry Income Received (\$ million)</b>				
	2018-19	2019-20	2020-21	2019-21 Average
Automotive Platforms and Application Systems R&D Centre (“APAS”)	14	12.0	28.5	20.3
Hong Kong Applied Science and Technology Research Institute (“ASTRI”)	96.6	117.0	65.5	91.3
Hong Kong Research Institute of Textiles and Apparel (“HKRITA”)	26.0	42.4	23.6	33.0
Logistics and Supply Chain MultiTech R&D Centre (“LSCM”)	30.0	25.3	52.6	39.0
Nano and Advanced Materials Institute (NAMI)	65.4	57.4	55.4	56.4

<b>Industry Income Received (\$ million)</b>				
	2018-19	2019-20	2020-21	2019-21 Average
<b>Total</b>	232	254.1	225.6	240

- Commercialisation income includes contract service income, licensing fees and royalties. In addition to conducting applied R&D in key areas, the R&D Centres also work closely with the industry to carry out applied R&D projects that suit the needs of the industry, and to transfer technologies to the industry, striving to commercialise R&D outcomes. In 2019-20 and 2020-21, the commercialisation income of the five R&D centres is as follows –

<b>Commercialisation Income (\$ million)</b>				
	2018-19	2019-20	2020-21	2019-21 Average
APAS	1.87	2.58	2.21	2.40
ASTRI	21.16	25.88	10.03	17.96
HKRITA	10.98	29.30	5.62	17.46
LSCM	10.09	15.95	24.12	20.04
NAMI	17.11	12.25	17.74	15.00
<b>Total</b>	<b>61.21</b>	<b>85.96</b>	<b>59.72</b>	<b>72.84</b>

- The average annual commercialisation income of the five R&D Centres in 2019-20 and 2020-21 increased about 20% as compared with that in 2018-19. Due to social unrest and the outbreak of the novel coronavirus disease in 2019-20 and 2020-21, it was not easy for commercialisation income to increase.

**(c) Statistics on cases of abuse of use of Industrial Estate (“IE”) sites managed by the Hong Kong Science and Technology Parks Corporation, and/or violation of the leasing conditions of the tenancy agreements of IE sites by tenants**

- All along, grantees for admission to the IE have been selected by the Hong Kong Science and Technology Parks Corporation (“HKSTPC”) under a rigorous and objective assessment mechanism. Upon the grant of sites, all grantees in the IEs are required to sign with the HKSTPC a lease agreement that stipulates the rights and responsibilities of both parties including, for instance, only operations approved by the HKSTPC can be carried out at

the premises, the required investment in the facilities or machinery of the factories, alienation restriction, prohibition against subletting, terms of surrender of factories, and the HKSTPC's rights of factory inspection.

- The HKSTPC has all along undertaken vigorous lease enforcement actions and conducts regular site inspections of the premises. If a grantee is found to be in breach of the terms and conditions of the lease agreement, the HKSTPC will take appropriate actions. During the period from January 2019 to August 2021, the HKSTPC issued three writs of summons in response to breaches of the terms and conditions of the lease agreement by IE grantees.

**(d) Competitive advantages of specific advanced or high-end manufacturing industries in Hong Kong**

- With the rapid development of I&T in recent years, more development opportunities are opened up for high-end manufacturing industries. Hong Kong has world-class universities and outstanding R&D talents. With a free and open economy, a sound legal system and a robust intellectual property protection regime, Hong Kong is an ideal place for industrialists, especially those engaging in high value-added and high-tech production, to set up their production lines. As mentioned by the Chief Executive in the 2021 Policy Address, Hong Kong has made considerable achievements in I&T in recent years and that under the strategy of “re-industrialisation”, the development of advanced manufacturing industries, which are based on new technologies and smart production, is also showing promising prospect.
- The successful development of high value-added industries will be able to promote local R&D levels, facilitate the commercialisation of R&D outcomes, and effectively accelerate the nurturing of talents. This will also help traditional manufacturers upgrade and transform, and shape the local high-end manufacturing ecosystem. The Government will listen to the opinions of the industry and continue to provide strong support for Hong Kong's high-end manufacturing industry in terms of infrastructure, capital, technology, talents and R&D. The following is a brief account of Hong Kong's competitive advantages in certain advanced or high-end manufacturing industries –

## Life and health sciences

- Hong Kong has a solid foundation in research and a good number of world-renowned experts, whose achievements have been widely acclaimed. We also have clinical trial centres which are recognised by the National Medical Products Administration, and their data which meet the relevant clinical trial standards are also widely recognised by relevant bodies in the United States and the European Union.
- In this regard, the HKSAR government has set up the *InnoHK* research clusters in the Hong Kong Science Park (“HKSP”), including “*Health@InnoHK*” which focuses on various medical-related technologies. The Chief Executive has also proposed in the Policy Address that the “*InnoLife Healthtech Hub*” be established in the Hong Kong-Shenzhen Innovation and Technology Park in the Lok Ma Chau Loop, focusing on scientific research on areas including biomedicine, chemistry, physics, engineering, and artificial intelligence, for application in various fields such as prevention, diagnosis, pathology tracking, medicine, surgical micro-robots, advanced treatment, and rehabilitation.

## Food technologies and food processing

- Food technologies and food processing industry is another industry where Hong Kong has a competitive advantage. Food factories in Hong Kong have always implemented stringent food safety and quality control and the Centre for Food Safety under the Food and Environmental Hygiene Department has been implementing the “Food Surveillance Programme” to ensure that food for sale complies with legal requirements and is suitable for human consumption. There is plenty room for the food technologies and food processing industries to introduce innovative technologies and enhance production capacity, thereby realising high value-added “re-industrialisation”.
- The Innovation and Technology Commission launched the “Re-industrialisation Funding Scheme” in end July 2020 and has so far approved in principle to support 16 applications, about half of which are related to food manufacturing / processing. The research report “Made by Hong Kong – The Way Forward for HK Industries” published by the Federation of Hong Kong Industries earlier also pointed out that Hong Kong has the ability to develop food technologies and food processing industries locally.

## Microelectronics

- Nearly 200 companies in the HKSP are engaged in the electronics industry, including leading companies in the industry. The HKSTPC has been committed to providing support for technology companies and start-ups in recent years, and has developed various supporting facilities in the IEs. For example, the Microelectronics Center in Yuen Long IE will be completed in 2023 to absorb the microelectronic products production industries and related industries.

## Materials and precise engineering

- More than 140 companies engage in the materials and precise engineering industries in the HKSP. The HKSTPC completed refurbishing a four-storey factory in the Tai Po IE into the Precision Manufacturing Centre (“PMC”) in March 2017 with a view to fostering high technology smart production. The PMC has been fully occupied by tenant enterprises engaging in precise engineering and assembly, new material manufacturing and environmentally-friendly yarn production, tooling and advanced indoor hydroponic industries, etc.

### **(e) Programmes related to “re-industrialisation” / “i4.0” offered by local universities**

- The realisation and application of “re-industrialisation” and “i4.0” cover a number of different technology areas and types of courses, such as artificial intelligence, data, smart manufacturing, mechanical engineering, electronic engineering, chemical engineering, and automation technology, etc. Having consulted the University Grants Committee Secretariat, we have compiled a list of courses related to “re-industrialisation” and / or “i4.0” offered by local universities in the 2020/21 academic year according to the relevant technology areas under the Academic Programme Categories and keywords of the course names at **Appendix** for Members' reference.

**Innovation and Technology Bureau  
Innovation and Technology Commission  
November 2021**

**List of University Grants Committee (“UGC”) funded undergraduate and post-graduate courses related to “re-industrialisation” and / or “i4.0” of local universities in the 2020/21 academic year compiled according to the relevant Academic Programme Categories and keywords**

<b>Local University</b>	<b>Types of Programme</b>	<b>Programme</b>
City University of Hong Kong	Undergraduate (“Ug”)	Bachelor of Engineering in Bioengineering
		Bachelor of Engineering in Biomedical Engineering
		Bachelor of Engineering in Computer and Data Engineering
		Bachelor of Engineering in Computer Engineering
		Bachelor of Engineering in Data and Systems Engineering
		Bachelor of Engineering in Electronic and Communication Engineering
		Bachelor of Engineering in Energy Science and Engineering
		Bachelor of Engineering in Environmental Science and Engineering
		Bachelor of Engineering in Information Engineering
		Bachelor of Engineering in Manufacturing Systems Engineering
		Bachelor of Engineering in Mechanical Engineering
		Bachelor of Engineering in Mechatronic Engineering
		Bachelor of Engineering in Nuclear and Risk Engineering
		Bachelor of Engineering in Systems Engineering and Management
		Bachelor of Engineering in Materials Engineering
		Bachelor of Engineering in Materials Science and Engineering
		Bachelor of Science in Computer Science
		Bachelor of Science in Data Science
		Department of Electrical Engineering (options: BEng Computer and Data Engineering, BEng Electronic and Electrical Engineering, BEng Information Engineering)
		Department of Mechanical Engineering (options: BEng Mechanical Engineering, BEng Nuclear and Risk Engineering)

Local University	Types of Programme	Programme
		School of Data Science (options: BSc Data Science, BEng Data and Systems Engineering)
		School of Energy and Environment (options: BEng Energy Science and Engineering, BEng Environmental Science and Engineering)
	Research Postgraduate (“RPg”)	PhD (Computer Science)
		PhD (Data Science)
		PhD (Electrical Engineering)
		PhD (Energy and Environment)
		PhD (Materials Science and Engineering)
		PhD (Mechanical Engineering)
		PhD (Systems Engineering and Engineering Management)
PhD (Chemistry)		
Hong Kong Baptist University (“HKBU”)	Ug	Bachelor of Science
		BSc - Business Computing and Data Analytics
		BSc - Computer Science
	RPg	MPhil - Chemistry
		MPhil - Computer Science
		PhD - Chemistry
		PhD - Computer Science
		PhD - Institute of Interdisciplinary Studies
	Lingnan University	Ug
The Chinese University of Hong Kong (“CUHK”)	Ug	B.Eng. AI: Systems & Tech
		B.Eng. Biomedical Engineering
		B.Eng. Computer Engineering
		B.Eng. Electronic Engineering
		B.Eng. in Energy and Environmental Engineering
		B.Eng. Information Engineering
		B.Eng. Mechanical & Automation Engineering
		B.Sc. Computer Science
		B.Sc. Mathematics and Information Engineering
		Engineering (broad-based)
		RPg
	M.Phil. in Electronic Engineering	
	M.Phil. in Information Engineering	
	M.Phil. in Mechanical and Automation Engin.	
	Ph.D. in Biomedical Engineering	
	Ph.D. in Computer Science & Engin.	
	Ph.D. in Electronic Engineering	
	Ph.D. in Information Engineering	
	Ph.D. in Mechanical and Automation Engin.	
M.Phil. in Biochemistry		
M.Phil. in Chemistry		



Local University	Types of Programme	Programme
		M.Phil. in Materials Science and Engineering
		Ph.D. in Biochemistry
		Ph.D. in Chemistry
		Ph.D. in Materials Science and Engineering
The Education University of Hong Kong	Ug	Bachelor of Social Sciences (Honours) in Global and Environmental Studies (Four-year Full-time)
The Hong Kong Polytechnic University (“PolyU”)	Ug	BEng (Hons) Electrical Engineering
		BEng (Hons) Electronic & Information Engineering
		BEng (Hons) Industrial & Systems Engineering
		BEng (Hons) Mechanical Engineering
		BEng (Hons) Product Analysis & Engineering Design
		BEng (Hons) Product Engineering with Marketing
		BEng (Hons) Scheme in Mechanical Engineering
		BEng (Hons) Scheme in Product & Industrial Engineering
		BEng (Hons) Transportation Systems Engineering
		Broad Discipline of Computing
		BSc (Hons) Enterprise Engineering with Management
		BSc (Hons) Information Security
		BSc (Hons) Scheme in Logistics & Enterprise Engineering
		BSc (Hons) Data Science & Analytics
	RPg	Doctor of Philosophy (Aeronautical and Aviation Engineering)
		Doctor of Philosophy (Biomedical Engineering)
		Doctor of Philosophy (Building and Real Estate)
		Doctor of Philosophy (Building Services Engineering)
		Doctor of Philosophy (Computing)
		Doctor of Philosophy (Electrical Engineering)
		Doctor of Philosophy (Electronic and Information Engineering)
		Doctor of Philosophy (Industrial and Systems Engineering)
		Doctor of Philosophy (Mechanical Engineering)
		Doctor of Philosophy (Textiles and Clothing)

Local University	Types of Programme	Programme
		Master of Philosophy (Biomedical Engineering) Master of Philosophy (Building Services Engineering) Master of Philosophy (Computing) Master of Philosophy (Electrical Engineering) Master of Philosophy (Industrial and Systems Engineering) Master of Philosophy (Mechanical Engineering) Master of Philosophy (Textiles and Clothing) PhD - Civil & Environmental Engineering
The Hong Kong University of Science and Technology (“HKUST”)	Ug	Bachelor Deg SSCI (Group A) BEng & BBA Dual Degree Program in Technology and Management BEng (School of Engineering) BEng Chemical and Biomolecular Engineering BEng Chemical and Environmental Engineering BEng Chemical Engineering BEng Computer Engineering BEng Computer Science BEng Electronic Engineering BEng Industrial Engineering and Engineering Management BEng Mechanical Engineering BEng Sustainable Energy Engineering BEng/BBA Chemical and Biomolecular Engineering and General Business Management BEng/BBA Chemical Engineering and General Business Management BEng/BBA Computer Engineering and General Business Management BEng/BBA Computer Science and General Business Management BEng/BBA Electronic Engineering and General Business Management BEng/BBA Industrial Engineering and Engineering Management and General Business Management BEng/BBA Mechanical Engineering and General Business Management BSc Computer Science BSc Data Science and Technology BSc Integrative Systems and Design

Local University	Types of Programme	Programme
		BSc Quantitative Social Analysis
		BSc Risk Management and Business Intelligence
	RPg	MPhil Atmospheric Environmental Science
		MPhil Chemical and Biomolecular Engineering
		MPhil Computer Science and Engineering
		MPhil Electronic and Computer Engineering
		MPhil Environmental Science, Policy and Management
		MPhil Industrial Engineering and Decision Analytics
		MPhil Mechanical Engineering
		MPhil Nano Science and Technology
		PhD Atmospheric Environmental Science
		PhD Chemical and Biomolecular Engineering
		PhD Computer Science and Engineering
		PhD Electronic and Computer Engineering
		PhD Environmental Science, Policy and Management
		PhD Industrial Engineering and Decision Analytics
		PhD Industrial Engineering and Logistics Management
		PhD Mechanical Engineering
		PhD Nano Science and Technology
		MPhil Chemistry
The University of Hong Kong (“HKU”)	Ug	Bachelor of Arts and Sciences in Applied Artificial Intelligence
		Bachelor of Arts and Sciences in Social Data Science
		Bachelor of Business Administration (Information Systems)
		Bachelor of Engineering
		Bachelor of Engineering in Computer Science
	RPg	MPhil-Computer Science
		MPhil-Electrical and Electronic Engineering
		MPhil-Industrial and Manufacturing Systems Engineering
		MPhil-Mechanical Engineering
		PhD-Computer Science
		PhD-Electrical and Electronic Engineering
		PhD-Industrial and Manufacturing Systems Engineering
		PhD-Mechanical Engineering
		MPhil-Chemistry

**List of non-UGC funded full-time undergraduate and post-graduate courses related to “re-industrialisation” and / or “i4.0” of local universities in the 2020/21 academic year compiled according to the relevant Academic Programme Categories and keywords**

<b>Local University</b>	<b>Types of Programme</b>	<b>Programme</b>
HKBU	Taught Postgraduate (“TPg”)	Master of Science in Advanced Information Systems
		Master of Science in Green Technology (Energy)
		Master of Science in Information Technology Management
		Master of Science in AI and Digital Media
		Master of Science in Analytical Chemistry
		Master of Science in Data Analytics and Business Economics
CUHK	TPg	Master of Science in Computer Science
		Master of Science in Electronic Engineering
		Master of Science in Information and Technology Management
		Master of Science in Information Engineering
		Master of Science in Mechanical and Automation Engineering
		Master of Science in Systems Engineering and Engineering Management
		Master of Science in Accreditation Chemistry
		Master of Science in Mechanical and Automation Engineering
The Hang Seng University of Hong Kong	Ug	Bachelor of Arts (Honours) in Applied and Human-Centred Computing
		Bachelor of Science (Honours) in Data Science and Business Intelligence
PolyU	TPg	Master of Engineering in Building Services Engineering
		Master of Science in Data Science and Analytics
		Master of Science in Knowledge and Technology Management
HKUST	TPg	Master of Science in Aeronautical Engineering
		Master of Science in Big Data Technology
		Master of Science in Data-Driven Modeling
		Master of Science in Electronic Engineering
		Master of Science in Environmental Engineering and Management
		Master of Science in IC Design Engineering
Master of Science in Information Technology		

<b>Local University</b>	<b>Types of Programme</b>	<b>Programme</b>
		Master of Science in Intelligent Building Technology and Management
		Master of Science in Mechanical Engineering
		Master of Science in Technology Leadership and Entrepreneurship
		Master of Science in Telecommunications
		Master of Science in Analytical Chemistry
Hong Kong Metropolitan University	Ug	Bachelor of Computing with Honours in Internet Technology
		Bachelor of Engineering with Honours in Building Services Engineering and Sustainable Development
		Bachelor of Engineering with Honours in Electronic and Computer Engineering
		Bachelor of Engineering with Honours in Testing and Certification
		Bachelor of Science with Honours in Computer Engineering
		Bachelor of Science with Honours in Computer Science
		Bachelor of Science with Honours in Cyber and Computer Security
		Bachelor of Science with Honours in Food Testing Science
		Bachelor of Science with Honours in Testing and Certification
		Bachelor of Science with Honours in Testing Science (Environmental Protection)
		Bachelor of Science with Honours in Testing Science (Food)
		Bachelor of Science with Honours in Testing Science and Certification
		Bachelor of Science with Honours in Data Science
		Bachelor of Science with Honours in Statistical Analysis and Data Science
		TPg
	Master of Science in Global Environmental Management for Sustainable Development	
HKU	TPg	Master of Science in Computer Science
		Master of Science in Electronic Commerce and Internet Computing
		Master of Science in Engineering (Building Services Engineering)
		Master of Science in Engineering (Electrical and Electronic Engineering)

<b>Local University</b>	<b>Types of Programme</b>	<b>Programme</b>
		Master of Science in Engineering (Energy Engineering)
		Master of Science in Engineering (Environmental Engineering)
		Master of Science in Engineering (Geotechnical Engineering)
		Master of Science in Engineering (Infrastructure Project Management)
		Master of Science in Engineering (Mechanical Engineering)
		Master of Science in Engineering (Structural Engineering)
		Master of Data Science
		Master of Science in Engineering (Industrial Engineering and Logistics Management)