Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Micro-Credentials

Information Sheet and Descriptor

Definition (working)

A micro-credential *is a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards. The proof is contained in a certified document that lists the name of the holder, the achieved learning outcomes, the assessment method, the awarding body and, where applicable, the qualifications framework level and the credits gained. Micro-credentials are owned by the learner, can be shared, are portable and may be combined into larger credentials or qualifications. They are underpinned by quality assurance following agreed standards* ***(working definition approved by HCI Steering, 11 February 2021).***

Micro-credentials – range of credits from 2.5* ECTS, 5 ECTS, 10 ECTS.

*Note: for the 2021/22 academic year micro-credentials will consist of 5 ECTS or 10 ECTS.

Micro-credentials:

- Consist of credit offered for continuing/professional development purposes.
- Are specifically designed to upskill the workforce.
- May be stackable.
- Offer flexible delivery to meet the needs of industry, business and employees.

MC = Micro-Credential

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HCI Pillar 3

Micro-Credentials: Descriptor

HCI Cluster and Work Package for the proposed micro-credential:	Cluster 1: Work-package 1
To whom will the micro-credential be offered?	Specify the *specific industry/profession targeted:* This programme is designed for Innovators, Senior Managers & Business Leaders who want to grasp opportunities with Big Data Analytics. In addition, technical profiles such as Business Analysts and Big Data engineers who are moving to a managerial role or want to expand their business view will also benefit from this programme.
Micro-credential title:	Leading with Business Analytics and Big Data
Is the proposed micro-credential a new or existing module (repurposed)?	New module/MC
(For Existing Modules Only)	
Existing module detail	***If this is an existing module to be repurposed as a micro-credential, please respond to the questions below.*** ***If not, proceed to the next section.*** State the name of the module and programme *(and enclose module descriptor if available)*: Click or tap here to enter text. Is the module shared with another discipline/School? If so, name the discipline/School: Click or tap here to enter text. **Existing Module details:** Select UG or PG. State year group. No. of ECTS of module: Click or tap here to enter text.

	NFQ level: Click or tap here to enter text. School (owner and discipline): Click or tap here to enter text. Module coordinator: Click or tap here to enter text. Code in SITS: Click or tap here to enter text. *If changes are required to the existing module so that it can exist coherently as a micro-credential please give details (please also outline how the existing module will meet the criteria of a micro-credential in terms of meeting the needs of industry and, providing flexible delivery):* Click or tap here to enter text.

Micro-credential information		
NFQ level (if applicable)	9	PG
ECTS	*Note: 5 ECTS: 100–125 hrs student effort (PG: 1 ECT: 25 hrs student effort)* 5 ECTS (125 student effort hours)	
School (owner) and discipline	Trinity Business School	
MC Coordinator (name) *(Must be academic / teaching staff)*	Dr. Philippe Baecke, Adjunct Teaching Fellow, TBS (Dr. Baecke has been an adjunct teaching fellow in TBS at PG level for over 6 years and a collaborator within the School's Centre for Digital Business and Analytics). Dr. John Dong, Chair and Professor of Business Analytics, TBS.	
State other Schools/external organisations involved in the delivery of the micro-credential (if applicable)	N/A	
Industry/profession	**Specify the industry/profession targeted by the micro-credential:** This MC is designed for Innovators, Senior Managers & Business Leaders who want to grasp opportunities with Big Data Analytics. In addition, technical profiles such as Business Analysts and Big Data engineers who are moving to a managerial role or want to expand their business view will also benefit from this micro-credential.	

What market need is addressed by the micro-credential:

Most organisations realise that Big Data is an important asset that can deliver competitive advantage. However, in practice, few organisations fully exploit this value. This MC course provides a roadmap to successfully understand and exploit Analytics, Big Data & AI opportunities within an organisation. It aims to bridge the gap between analytical concepts and the business value that can be created from the implementation of Big Data based insights and knowledge. Based on practical examples, this MC will help professional learners to understand the technology behind Big Data and Artificial Intelligence which will enhance communication and collaboration with Data Scientists and Data Engineers. However, the success of data driven projects goes beyond the application of analytical techniques. This MC course also demonstrates how strategy, people and cultivation of Big Data projects is essential in turning large amounts of data into value adding innovation and key components of business success.

State the industry/employer-related skills addressed by the micro-credential:

Data & Analytics Strategy: The MC discusses the development of a data & analytics strategy and provides a roadmap to improve the learner organisation's data driven maturity. Business Analytics and Artificial Intelligence: The MC will facilitate participants to understand the potential of multiple analytical and AI techniques. This will help participants identify new business opportunities with these technologies. The MC explores, in a managerial understandable way, the power of machine learning and predictive analytics; automation opportunities with prescriptive analytics; how big data sources can be exploited using network analyses and natural language processing. Further, cases are discussed that are based on advanced AI techniques, such as deep learning and deep reinforcement learning.
Big Data Technology: The MC course will explore how to align a Big Data strategy with technology requirements. The data architecture and technology needed to successfully operationalise Big Data projects will be discussed on a level understandable for managers. Cultivating Data & Analytics: Culture is the "secret sauce" for successful data driven innovations. Business value will only be realised if the solutions are also accepted internally, by employees, and externally, by customers. Hence, the MC will focus on how to navigate an organisation towards more data driven decision making and how to communicate AI initiatives to stakeholders and customers, taking into account new regulations.

	How will the delivery of this micro-credential facilitate industry/professional staff participation (flexible delivery – online/blended/face-to-face – evenings/weekends etc)? 4-day delivery of micro-credential face to face. This will be split into 2 x 2-day sessions, with 3 weeks in between. In addition, professional learners will be strongly encouraged to integrate their learning with their professional advancement goals by focusing on industry-relevant topics and by actively engaging with their employer and/or colleagues to address cultural change within their organisation.
Teaching staff & if appropriate institutional/industry affiliation	Name all teaching staff involved and if external, the name of the organisation. Dr. Philippe Baecke, Adjunct Teaching Fellow, TBS Dr. John Dong, Chair and Professor of Business Analytics, TBS.
Min./max. number of students	Min. number of students: 12 Max. number of students: 25
Mode of delivery	Face-to-face Any further details: Will be delivered online (via Zoom) if unable to take place face-to-face due to Covid restrictions. TBS Executive Education have expertise in delivering short courses online.
MC entry & admission requirements/pre-requisites (if applicable)	The micro-credential targets professional learners from mid and senior levels from the private, public and third sectors and will be open to graduates with a degree (or equivalent) with a strong academic record in any discipline from a recognised third level institution. Applicants without a degree are welcome to apply provided they can show a proven managerial track record. All applicants are required to have a minimum of 3 years professional or managerial work experience (this is in-line with entry criteria for other TBS post-experience postgraduate programmes such as the MBA and Executive MBA programmes). Language requirements for students whose first language is not English are IELTS 6.5 or TOEFL IBT 90 for non-native English speakers.

<table>
<tr><td></td><td colspan="3">In case of heavy competition for places or concern regarding a particular applicant's suitability, applicants may be interviewed.</td></tr>
<tr><td>Proposed commencement date</td><td colspan="3">September 2021</td></tr>
<tr><td>Micro-credential frequency, duration and term</td><td>Frequency of delivery during the academic year:

Up to twice a year</td><td>Duration of the MC (e.g. 6 weeks). If block delivery applies provide details:

4-day block delivery, split into 2 x 2-day sessions</td><td>Indicate term(s):

Michaelmas ☒
Hilary ☒
Trinity ☒</td></tr>
<tr><td>Contact and independent study hours (include total)</td><td colspan="3">(1 ECTS = 25 hrs) Note: contact hours also relate to online delivery.

Lectures – 30 hours.

Study/Self Study – 60 hours.

Assignment – 35 hours.

Total – 125 hours</td></tr>
<tr><td>Micro-credential aims</td><td colspan="3">The micro-credential is designed to cover a range of topics such as development & management of big data strategy, identifying opportunities within AI and predictive analytics, exploring new big data sources such as text & network data, aligning big data strategy with technology and the automation of business processes using predictive analysis.</td></tr>
<tr><td>Micro-credential learning outcomes (approx. 5)</td><td colspan="3">Resources: Academic Practice and QQI

Note: Learning outcomes should stem from and align with the MC aims and start with an explicit and assessable verb.

On successful completion of this micro-credential, learners will be able to:

LO1 Critically analyse and develop a data & analytics strategies that may best support your organisation

LO2 Develop a data driven innovation for your organisation

LO3 Select suitable analytical techniques and technologies for specific business cases

LO4 Communicate better with data scientist and data engineers in your organisation</td></tr>
</table>

	LO5 Evaluate and prioritize data driven and AI innovations
MC content areas. *(Bullet points can be used)* If the MC (or components) will be delivered in a blended format, identify the content that will be delivered online.	This is the micro-credential content areas covered: • Data & Analytics Strategy: Assess the data driven maturity of an organisation and based on this develop a data & analytics value map with opportunities for an organisation. In addition, identify and develop enables that could improve the success of the selected opportunities. • Business Analytics: Get a better understanding of analytical techniques, such as descriptive, predictive and prescriptive analytics. Based on this, participants should better select the correct techniques to successfully implement data & analytical opportunities • Big Data Technology: Get a better understanding of the technology needed to acquire and analyse data. • Artificial Intelligence: Smartly combine predictive analytics (machine learning), prescriptive analytics and big data technology to develop systems that are able to mimic human behaviour an create business value.
Teaching and Learning Methods (state pedagogical approach). Include the online environment(s) to deliver the MC e.g. Blackboard/Zoom, if appropriate.	Resources: Academic Practice This is a 4-day micro-credential, comprising of lectures and interactive workshops, with additional reading material and independent learning and reviewing. Face-to-face classes will be supported by a variety of teaching and learning methods including group work, student-led discussion, self and peer evaluation. The VLE (BlackBoard) will be used to host activities including Collaborate Ultra and discussion boards. It will also be used to provide structured access to all resources and assignments.
MC assessment components *Please include the following…* *How will the MC be assessed?* *Indicate the LO assessed for each assessment (e.g. LO1 etc.)* *Indicate the % of overall mark each assessment is worth.*	**Overall Comment** In this course participants should demonstrate a better understanding of big (data) technology and analytical techniques such that they are able to identify and develop data driven innovations for their organisation. This, taking into both business-related as technology-related aspects of the innovation. Further they should be able to well evaluate these innovations on their business potential and technical feasibility. This will be assessed based on 2 deliverables:

Indicate if summative/formative (e.g. essay/research paper)	(1) **Individual detailed pitch deck and recorded presentation** that explains in detail a data driven innovation for your organisation followed by a viva focused on the presentation, its key assumptions, findings and recommendations. This presentation should be developed based on the data driven innovation canvas on your organisation. A Questions and Answer session will follow the presentation where students should be prepared to provide evidence, further details and answer questions in relation to their rationale behind their recommendations and findings. (80%) - LO1, LO2, LO3, LO4
	
	Students will be requested to develop a data driven innovation for their organisation based on the data driven innovation canvas. For this they will have to discuss the following aspects:
	
	Data driven maturity (LO 1)
	
	To develop a data driven strategy, they first will have to assess their companies maturity on multiple dimensions using a framework discussed in class
	
	Action (LO 1 & LO 2)
	In this part, the participants will have to explain the business value of the data driven initiative as you would do this to the executive committee. Make sure the initiative is specific and tangible.
	
	Acquire (LO 3 & LO 4)
	Map out in a visually attractive way all data sources you need to realise this specific initiative (CRM systems, ERP systems, applications, sensors, third parties, etc.).
	
	Analyse (LO 3 & LO 4)
	Identify and explain the analytical techniques you would apply to realise each data driven initiative:
	
	• Descriptive analytics
	• Predictive analytics
	• Prescriptive analytics: if then rule engine
	• Prescriptive analytics: optimisation
	• Big data analytics:
	  ○ network analysis
	  ○ text mining
	  ○ sensor data
	  ○ others
	• Advanced artificial intelligence
	  ○ Natural language processing

	○ Deep learning ○ Deep reinforcement learning Please note: You will not have to apply all techniques for an initiative. Try to limit the explanation to one or two techniques with a detailed explanation. ***Adoption barrier and enablers (LO 1)*** Participants will have to identify potential adoption barriers for their innovation and discuss how they would turn this into enablers. This data driven innovation needs to presented in a visually attractive recorded presentation of 8 to 10 minutes. **(2) Active participation in peer-feedback process (20%)** - **(LO5)** Participants will have to evaluate 3 data driven innovations of their peers and provide feedback (300 to 400 words per innovation). Further they will have to prioritize these innovations based on 2 criteria: - potential business value and cost - feasibility in term of data acquisition and analysis A detailed assessment brief and rubric will be attached to the course outline. Lecturer will be available for consultation throughout the scheduled delivery period of the Micro-credential.
G=State how the MC will be reassessed if failed	Failure is defined as a module grade of less than 50%. Only one resubmission will be allowed per assessment element, and the maximum mark awarded for the resubmitted assignment is 50%. Students who, following re-submission, have failed to pass a module will be deemed to have failed overall, and may apply to repeat the Micro-credential.
Pass standard & any special requirements for passing the MC	50% required for pass.
Penalties for late submission	Late submissions without an extension will be capped at 50%
Core reading (if applicable)	• McAfee, A., and Brynjolfsson, E. 2012. Big data: The management revolution. Harvard Business Review, 90(10), 60-68. • Davenport, T. H. 2006. Competing on analytics. Harvard Business Review, 84(1), 98-107.

	• Barton, D., and Court, D. 2012. Making advanced analytics work for you. Harvard Business Review, 90(10), 78-83. • Handouts will be provided during the programme for reading. These change per delivery of course, as material is constantly updating.
Are there subject experts in other Schools/disciplines?	No If yes, name of School and discipline Click or tap here to enter text. Has the MC been discussed with the School/discipline and DUTL/DTLP? Yes
Proposed student fee	External student fee €2,000

Faculty Dean and School Executive Approval:

Date of approval of the proposed micro-credential by the School Executive: 18/05/2021 (Letter of support provided by the Dean)

Date of approval of financial information by Faculty Dean: 13/05/2021

Signed by Head of School: Andrew Pole Date: 21.06.21

Faculty Dean: Gail McElroy. Date: 08.06.21