



[2022] Academic Performance and Career Plan

This template provides the basis for an annual discussion between you and your Line Manager or their delegate, with the objective of identifying your future career development needs, reviewing your activities and achievements over the past year, and planning your work for the next year. Your Academic Portfolio, available in the Business Intelligence Dashboards in the Staff Portal, will provide you with easy access to some of the teaching and research data that you may wish to use as evidence of your achievements. You will need to complete the form and update your CV, and then submit a copy of both by uploading them in Employee Kiosk under the 'Performance and Career Planning' option from the menu; this should be done prior to meeting with your Line Manager or delegate, in order to facilitate the discussion. Following the discussion and agreement with your Line Manager or delegate, the final version of your plan should be uploaded in Employee Kiosk for final approval by your Line Manager / delegate.

Your Academic Performance and Career Plan document should be aligned with the Academic Capability Framework, with reference to Teaching, Research and Engagement activities. The areas of focus within the Academic Capability Framework will be different for each individual, depending on discipline area, role, academic level, stage of career and achievement relative to opportunity. All academic staff, irrespective of role, are expected to address the Engagement category.

DETAILS			
Staff ID number	226167G	Title	Dr
First name	Benchawan	Last name	Wiwatanapataphee
Position title	Associate Professor	Date commenced at Curtin	1 January 2015
Faculty and School (or equivalent)	Faculty of Science and Engineering, School of EECMS	Name of Head of School (or equivalent)	Tele Tan
Academic level (tick one)	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input checked="" type="checkbox"/> E <input type="checkbox"/>		
Role (tick one)	Teaching & Research <input checked="" type="checkbox"/> Research Allocation 40 % Teaching Academic <input type="checkbox"/> iSoLT Allocation % Research Academic <input type="checkbox"/> Teaching Allocation % Other <input type="checkbox"/> Click or tap here to enter text.		
Fractional appointment	No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> If yes, what fraction? Click or tap here to enter text.		
Early Career Academic (normally within 5 years of date of award of doctoral degree)	No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> If yes, date of conferral? Click or tap to enter a date.		
Career Breaks (list any periods of more than 6 weeks continuous leave taken over the past year or intended to be taken over the next year)	No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> If yes, list details Click or tap here to enter text.		
Flexible work arrangements (list type(s) of flexibility that were used over the past year or required over the next year e.g. changes in start and finish times due to carer responsibilities)	No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> If yes, list details Click or tap here to enter text.		



Career Development

Think about your overall career trajectory and where you would like to progress with your career in the next 3 years. What support might you need to get there, and what might impede your progress?

3-YEAR CAREER DEVELOPMENT PLAN

What are your career aspirations over the next 3 years?

I will contribute to international collaboration for articulation programs with universities in Thailand (Mahidol University and MAEJO University) and China, and continue to have another articulation partner, King Mongkut North Bangkok University. I will also make substantial contribution to achieve research excellence and publish research papers in top journals

What do you see as the present challenges and opportunities in advancing your career?

Mathematical research problems for the 21st century have involved supply chain modelling and optimisation, machine learning and Blockchain technology that are at the forefront of the modern data science and artificial intelligence. The research includes a balanced combination of mathematical foundations, such as advanced numerical approaches, optimization, high-dimensional statistics, data mining etc. As I have solid knowledge in these mathematical foundations, database management and computer programming skill, it is a great opportunity to have more PhD students working on Machine learning and Blockchain technology in the following research areas: 1) Tokenization and trading of in-ground mineral assets; 2) Supply chain management; 3) Healthcare; 4) Contact tracing for Infectious control

What professional development opportunities do you propose, in order to advance your career development or to address any gaps in your breadth of experience?

I propose to have professional development opportunities in the leadership training such as Online course for professional development, leadership + management and collaboration at <https://learning.linkedin.com/>



[2022] Review of Achievements

In reviewing your activities over the last 12 months, did you achieve everything that was in your Work Plan from the previous year? Were you supported in reaching your milestones / achievements? What other achievements would you like to highlight, including a review of your principal achievements over the last 3 years?

For new employees, or if you have not participated in a conversation previously, review your work to date and identify highlights, key achievements and opportunities.

PERFORMANCE REVIEW

TEACHING

If you are a Teaching Academic, you will need to include iSoLT (Innovation and Scholarship of Learning and Teaching) activities as part of your review.

Build teaching capability

1. Unit coordinator for 3 units:
 - INDE2000 Supply Chain Modelling and Optimisation (UG)
 - INDE5000 Supply Chain Modelling and Optimisation (PG)
 - MATH5004 Advanced Numerical Analysis
 - Advanced Topics in Applied and Computational Mathematics at YANSHAN University (UG)

2. Teaching:
 - INDE2000 Supply Chain Modelling and Optimisation (UG) (Lecturer)
 - INDE5000 Supply Chain Modelling and Optimisation (PG) (Lecturer)
 - MATH5004 Advanced Numerical Analysis semester 2 (Lecturer)
 - Advanced Topics in Applied and Computational Mathematics (Lecturer)
 - STAT2005 Computer Simulation semester 1 (Moderation & Co-assessor duty)
 - STAT2004 Analytics for Observational Data semester 2 (Moderation & Co-assessor duty)
 - MATH1014 Foundation of Calculus (UG) semester 1 (Workshop duty)

3. Project Supervision:
 - STAT4000 Actuarial Science Honours Dissertation 1
 - 19776222 Noorfatima Iqbal "Optimal Portfolio – Portfolio Management"
 - MATH3004 Industrial project (2 UG) students) Semester 2
 - 18350201 Hayden Henning "Traffic modelling and analysis of the Kwinana freeway northbound from before the Canning Highway off ramp to the Canning Highway on ramp"
 - 20696984 Pan Srichana "Single Machine Learning Model for Energy Resources Stock Prediction with Incidence"
 - MATH6001 Industrial Engineering Masters Project
 - 20658421 Le Carolyn "Portfolio Optimisation Using Different Risk Measures: Case in the Australian Stock Market Crash"

4. PhD Supervision:
 - One Graduate PhD student in 2022:
 - 1) 19711812 Chuanye Gu (co-Supervisor)

 - Two PhD students are ongoing:
 - 1) 19068291 Fahad Mesfer M Aljuaydi (Supervisor)
 - 2) 18280036 Otaif Amani Ahmed A (co-Supervisor)
 - 3) 19702159 Zhang Liyuan (co-Supervisor)
 - 4) 19185501 Nabubie Bashiruddin (Associate Supervisor)



Provide excellent teaching and student support

1. Teaching Evaluation:

Semester 1

- INDE2000 Supply Chain Modelling and Optimisation (low rate of response, 31%)
- INDE5000 Supply Chain Modelling and Optimisation (low rate of response, 13%)

Full Unit Report

- INDE2000 Supply Chain Modelling and Optimisation (UG) semester 1
Overall 25%
- INDE5000 Supply Chain Modelling and Optimisation (PG) semester 1
Overall 100%

Semester 2 (Reports will be available from 16/12/2022)

- MATH5004 Advanced Numerical Analysis

2. Unit improvement and development: All unit materials mentioned above have been revised and implemented.

Line Manager's (or delegate) comments:

As in previous year, Benchawan has made significant contribution in her teaching having been the unit coordinator for three units this year, both onshore and offshore. There is an exception in this year's low EVALUATION satisfaction rate for INDE2000. This is mainly due to technology failures specifically on the video recording of the lecture in her hybrid delivery. If this form of delivery is to continue in 2023, Benchawan will endeavour to check on the quality of the recordings prior to their release. In addition to her coursework teaching, Benchawan is active in project supervision at undergraduate and postgraduate levels. Benchawan has continued to build collaboration opportunities with international universities like Mahidol University, MAEJO University and King Mongkut's University of Technology Thonburi. The plan for 2023 is to further the partnership building with a university in Chang Mai.

Is overall teaching performance satisfactory? If no, please elaborate below.

No Yes

Click or tap here to enter text.

RESEARCH

If you are a Teaching Academic, you may wish to leave this section blank.

Build research capability

The research 2022 output for 2022 is in the following areas:

- Hybrid models for freeway traffic control using ramp metering and variable speed limits.
- Non-linear Optimization model for traffic flow control and management under non-recurrent events.
- Multivariable deep learning approach for traffic prediction under non-recurrent events.
- Mathematical analysis and modelling

Initiate and sustain programs of 'researcher-driven' and/or 'demand-driven' research

Grant: ARC Linkage Project Number LP170100341 "Improving Road Network Operations under Non-Recurrent Events" from September 2018 to November 2023. The project aims to develop an innovative approach for improving Road Network Operations (RNO) under non-recurrent events through analysis of big data. The partner organisation is MAINROADS WA (MRWA) providing traffic data and information of



new network design. Funding is being used for travel expenses, paper publication and 2 scholarships for Curtin PhD students.

Generate value and impact through research outputs

- I. Patent: Patent number: 85480. Application number: 0901004239. Awarded date: 03 Jan 2022. Publisher <https://patentservice.ipthailand.go.th/ecert/qr/256401028835211>
- II. Research papers:
 - 1) C Gu, C Wu, Y Wu, B Wiwatanapataphee 2022 Distributionally robust ramp metering under traffic demand uncertainty, *Transportmetrica B: Transport Dynamics* 10 (1), 652-666.
 - 2) X Zhang, H Tain, Y Wu, B Wiwatanapataphee 2022 The radial solution for an eigenvalue problem of singular augmented Hessian equation, *Applied Mathematics Letters* 134, 108330.
 - 3) F Aljuaydi, B Wiwatanapataphee, YH Wu 2022 Multivariate machine learning-based prediction models of freeway traffic flow under non-recurrent events, *Alexandria engineering journal*, Available online 26 October 2022 at <https://www.sciencedirect.com/science/article/pii/S1110016822006640>
 - 4) N Chuchalerm, W Sawangtong, B Wiwatanapataphee, T Siriapisith 2022 Study of Non-Newtonian blood flow-heat transfer characteristics in the human coronary system with an external magnetic field, *Mathematical Biosciences and Engineering* 19 (9), 9550-9570.
 - 5) H Tian, X Zhang, Y Wu, B Wiwatanapataphee 2022 Existence of Positive Solutions for a Singular Second Order Changing-Sign Differential Equation on Time Scales, *Fractal and Fractional* 6 (6), 315.
 - 6) X Zhang, D Kong, H Tian, Y Wu, B Wiwatanapataphee 2022 An upper-lower solution method for the eigenvalue problem of Hadamard-type singular fractional differential equation, *Nonlinear Analysis: Modelling and Control* 27, 1-14.
 - 7) X Zhang, P Xu, Y Wu, B Wiwatanapataphee 2022 The uniqueness and iterative properties of solutions for a general Hadamard-type singular fractional turbulent flow model, *Nonlinear Analysis: Modelling and Control* 27 (3), 428-444.
 - 8) F Aljuaydi, B Wiwatanapataphee, YH Wu 2022 Deep Learning-Based Prediction Models for Freeway Traffic Flow under Non-Recurrent Events, 2022 8th International Conference on Control, Decision and Information Technologies (CoDIT), IEEE, 1: 815-820. <https://ieeexplore.ieee.org/abstract/document/9803892>
 - 9) B Wiwatanapataphee, N Khajohnsaksumeth, YH Wu, G Jacoby, X Zhang 2022 Long-short term traffic prediction under road incidents using deep learning networks, 2022 8th International Conference on Control, Decision and Information Technologies (CoDIT), IEEE, 1: 500-505. <https://ieeexplore.ieee.org/abstract/document/9803895>
 - 10) B Wiwatanapataphee, W leosanurak, YH Wu, G Jacoby, X Zhang 2022 Traffic flow prediction under non-recurrent events using microscopic simulation, 2022 8th International Conference on Control, Decision and Information Technologies (CoDIT), IEEE, 1: 506-512. <https://ieeexplore.ieee.org/abstract/document/9804134>.

Line Manager's (or delegate) comments:

Benchawan has a current ARC Linkage grant in road network operations and optimisation with Mainroads WA. She is strongly encouraged to take advantage of this partner to explore new funding opportunities through PATREC (contact Sharon Biermann - sharon.biermann@uwa.edu.au) and the iMOVE CRC.

Benchawan will contact Prof Sharon Biermann of PATREC in the new year.

Benchawan's work on vascular modelling (supported by a patent) will be of interests to other researchers at Curtin. She is strongly encouraged to contact Prof Luke Haseler (luke.haseler@curtin.edu.au), a cardiology



professor at Curtin and Prof Sven's (and Heidi) group in acoustic signal processing. She is encourage to explore possibly contacting <https://www.artrya.com/> which is based in Perth. For anomaly activity detection in cardiovascular areas, Benchawan is encouraged to talk to Sonny Pham from Computing.

Is overall research performance satisfactory? If no, please elaborate below.

No Yes

Click or tap here to enter text.



ENGAGEMENT

Advance the profession and discipline

1. Refereeing ARC Project
 - 3 DP Projects
2. Refereeing papers
 - Alexandria Engineering Journal
 - Chinese Journal of Physics (Elsevier)
 - Cogent Mathematics
 - Advanced in Difference Equations
 - Hindawi
3. Serving Committees:
 - Assistant postgraduate coordinator to evaluate a number of post graduate student applications for Maths & Stats discipline
 - Member of Curtin Institute for Computation (Simulation) at <https://computation.curtin.edu.au/research/researchers/simulation/>
 - Member of Editorial board of international journal of multivariate data analysis (IJMDA)
 - Member of Editorial board of Cogent Mathematics and Statistics <https://www.cogentoa.com/journal/mathematics-and-statistics/editors>

Collaborate with external stakeholders

Research Collaboration with MAINROADs WA & NSW:

“Improving road network operations under non-recurrent events” from 03/09/2018 to 02/09/2022

Investigators

- Prof Yong Hong Wu (Chief Investigator – Curtin University)
- Prof Sherif Mohamed (Chief Investigator- The University of Queensland)
- A/Prof Benchawan Wiwatanapataphee (Chief Investigator- Curtin University)
- Mr. Craig Moran (Partner Investigation – MAINROAD NSW)
- Mr. Jacob Graham (Partner Investigation – MAINROAD WA)

Strengthen connections with global partners and campuses

1. Articulation programs between Mahidol University and Curtin University:
 - Assistant articulation-program coordinator for 3 degrees
 - i. Bachelor of Science (Actuarial Science)
 - ii. Bachelor of Science (Data Science)
 - iii. Bachelor of Science (Industrial Optimisation)
2. Articulation programs between MAJEO University and Curtin University:
 - Articulation-program coordinator for Bachelor of Science (Industrial Optimisation)

Line Manager's (or delegate) comments:

Benchawan's professional engagement extends to both industries and academia where she successfully used her influences and skills to maximum the outcomes in teaching and research. Further to this, she would like to focus her engagement activity to develop cross disciplinary and institution collaborations. I strongly encourage her to further her active work in forging articulation programs with international universities especially in Thailand.

I have also suggested that Benchawan takes in some mentoring roles for ECRs. For example, working with staff members in Computing (i.e. Redowan Madmud and Mahbuba Afrin) in areas of common interest would be great.



Is overall engagement performance satisfactory? If no, please elaborate below.

No Yes

Click or tap here to enter text.



[2023] Work Planning

List the principal activities and achievements you have planned for the next year, taking into account your review of the past year's achievements and your own career objectives. Your proposed activities and achievements should be aligned with the Academic Capability Framework.

WORK PLAN
<p>TEACHING If you are a Teaching Academic, you will need to include iSoLT (Innovation and Scholarship of Learning and Teaching) activities as part of your work plan.</p> <p>Build teaching capability Unit coordinator:</p> <ol style="list-style-type: none"> 1) INDE2000 Supply Chain Modelling and Optimisation 2) INDE5000 Supply Chain Modelling and Optimisation 3) MATH5004 Advanced Numerical Analysis 4) MATH3001 Applied Mathematical Modelling (UG) 5) MATH5005 Applied Mathematics Topics (PG) 6) Advanced Topics in Applied and Computational Mathematics at Yunshan University (UG) <p>Teaching: Lecturer-in-charge</p> <ol style="list-style-type: none"> 1) INDE2000(5000) Supply Chain Modelling and Optimisation UG (PG) level 2) MATH5004 Advanced Numerical Analysis 3) MATH3001 Applied Mathematical Modelling (UG)/MATH5005 Applied Mathematics Topics (PG) 4) Advanced Topics in Applied and Computational Mathematics at Yunshan University (UG) <p>Teaching: Workshop duty</p> <ul style="list-style-type: none"> - MATH1014 Foundations of Calculus <p>Teaching: Moderation & Co-assessor duty</p> <ul style="list-style-type: none"> - STAT2005 Computer Simulation - STAT2004 Analytics for Observational Data <p>Project Supervision</p> <ul style="list-style-type: none"> - STAT4004 Actuarial Science Honours Dissertation 1 - STAT4001 Actuarial Science Honours Dissertation 2 - MATH6001 Mathematics Master Project 3 - MATH6004 Industrial Engineering Masters Project - MATH3004 Industrial Project <p>PhD Supervision: Four PhD students are ongoing:</p> <ol style="list-style-type: none"> 1) 19068291 Fahad Mesfer M Aljuaydi (Supervisor 60%) 2) 18280036 Otaif Amani Ahmed A (co-Supervisor 40%) 3) 19185501 Bashiruddin Nabubie Ibra (Associate 20%) 4) 19702159 Zhang Liyuan (co-Supervisor 40%)
<p>RESEARCH If you are a Teaching Academic, you may wish to leave this section blank.</p>



See attached Research Plan

ENGAGEMENT

Advance the profession and discipline

Refereeing ARC Project at least 1 project

Refereeing papers at least 1 paper

Serving Committees:

- Assistant postgraduate coordinator to evaluate several post graduate student applications for Maths & Stats discipline
- Member of Editorial board of international journal of multivariate data analysis (IJMDA)
- Member of Editorial board of Cogent Mathematics and Statistics

<https://www.cogentoa.com/journal/mathematics-and-statistics/editors>

Collaborate with external stakeholders

Research Collaboration with MAINROADs WA.

Strengthen connections with global partners and campuses

Articulation programs between Mahidol University and Curtin University:

- Assistant articulation-program coordinator for 2 degrees: Bachelor of Science (Actuarial Science) and Bachelor of Science (Industrial Optimisation)

Articulation programs between MAJOE University and Curtin University:

- Articulation-program coordinator for Bachelor of Science (Industrial Optimisation)

LEAVE PLANS

When do you propose to take your 4 weeks annual leave?

2 weeks in January and 2 weeks in July

What other leave (e.g. Long Service Leave) plans do you have in the coming year?

Not applicable

ACKNOWLEDGEMENT

This Academic Performance and Career Plan document has been discussed and agreed with my Line Manager (or their delegate).

Line manager (or delegate) name	Tele Tan	Date	9/12/2022
Staff member name	Benchawan Wiwatanapataphee	Date	9/12/2022

Do you have any comments or feedback you wish to add about the conversation that you have had with your Line Manager (or delegate)?

Click or tap here to enter text.