Outputs Arising from Dean's Research Fund

Tenth Round

Individual Research Scheme (IRS)	
Project Leader	**Dr Cheng Jinping, SES**
Project Title *(Ref No.)*	Impacts and Mechanisms of Wastewater Discharge on Microbial Dynamics and Ecological Services in Receiving Waters and Its Community Response *(IRS-2)*
Output:	Journal / Book 1. Lo, L. S. H., Tong, R. M. K., Chan, W., Ho, W., & **Cheng, J*. (2025)**. Bacterial pathogen assemblages on microplastic biofilms in coastal waters. *Marine Pollution Bulletin*, *216*, 117958. 2. Utilizing Microbial Sentinels to Assess the Impact and Safety of Sewage Outlet Relocation and Induced Environment Gradients in Urbanized Tidal Coasts. *(Under Preparation)* Conference 1. Date: June 2024 (Hong Kong) Name: The 2nd International Conference on Eco-Environment & Health (ICEEH 2024) Title: Selection Succession of Biofilms on Microplastic Particles: Implications for Persistent Pollutants Enrichment and Pathogen Risks 2. Date: July 2024 (Okayama, Japan) Name: Water and Environment Technology Conference 2024 (WET2024) Title: Nutrient Loading, Bacterial Pathogens, and Microbial Communities in Coastal Aquaculture: Insights for Sustainable Coastal Water Management External Grant 1. ECS Project Title: Unravelling the Dynamics of Antibiotic-Resistant Genes and Pathogens in Microplastic Biofilm in Marine Aquaculture Environment: Assemblage, Dissemination, and Associated Environmental and Health Implications (Date of Approval: July 2024; Total Budget Approved: $723,259)

	2. Environmental and Conservation Fund of the HKSAR Government Project Title: Study of Microplastic Biofilm-facilitated Transfer and Enrichment of Aquatic Pathogens and Antibiotics Resistance in Hong Kong Waters, and Potential Mechanisms (Date of Approval: March 2024; Total Budget Approved: $497,600) Other Impact / Output 1. **Cheng J.** Best Environmental Innovation Award at "Southeast Asian Forum" 2024 International Conference Title: eDNA Bioinformatics for the Monitoring of Harmful Biological Agents in Coastal Waters
Project Leader	**Dr Chu Man Ying Amanda, SSPS**
Project Title *(Ref No.)*	Family Caregivers' Stress Burden and Depression: A Three-Level Intervention Approach on Building Family Resilience *(IRS-3)*
Output:	Journal / Book 1. **Chu, A. M. Y***., Tsang, J. T. Y., Tiwari, A., Yuk, H., & So, M. K. P. **(2024)**. Child-friendly family reduces parenting stress in Chinese families: the mediating role of family resilience. *Frontiers in Psychology*, *15*, 1430005. Conference 1. Date: January 2024 (Hokkaido, Japan) Name: Asia-Pacific Conference on Social Sciences & Management Title: Reducing Depression among Family Caregivers through a Three-Level Approach 2. Date: August 2025 (Tokyo, Japan) Name: International Conference on Econometrics and Statistics Title: An Emotional Analysis of Speech for Depression and Detection External Grant 1. PPR Project Title: Caregiving Concerns and Perceptions regarding Elderly Care Support and Policy in Hong Kong: A Study Using Internet Search Data (Date of Application: April 2024; Total Budget Requested: $448,550) Other Impact / Output 1. Collaborated with researchers from other disciplines and departments across various universities in Hong Kong, promoting interdisciplinary

	and cross-departmental research.
Project Leader	**Dr Li Wai Chin, SES**
Project Title *(Ref No.)*	The Mechanism of Arsenic and Antimony Mineralization in Soils at Antimony Smelting Contaminated Site *(IRS-4)*
Output:	Journal / Book 1. Pan, W. S., Zou, Q.*, Hu, M., **Li, W. C**., Xiong, X. R., Qi, Y. T., & Wu, C.* **(2023)**. Microbial community composition and cooccurrence patterns driven by co-contamination of arsenic and antimony in antimony-mining area. *Journal of Hazardous Materials*, *454*, 131535. 2. Microbial Response to Mining, Dressing and Smelting Activities in Antimony-Mining Area: Insights into C, N, S and As Cycling *(Under Preparation)* External Grant 1. GRF Project Title: Aging Behaviour of Microplastics at The Redox Interfaces of Paddy Soils and Implications for Rice Accumulation (Date of Application: October 2024; Total Budget Requested: $612,220)
Project Leader	**Dr Lina Vyas, SSPS**
Project Title *(Ref No.)*	Turnover Intention of Healthcare Workers in Hong Kong *(IRS-5)*
Output:	Journal / Book 1. Motivator vs. Hygiene Factors in Reducing Turnover Intentions Among Healthcare Workers / Human Resources for Health. *(Under Preparation)* 2. The Impact of Emotional Demands on Burnout and Job Stress in Healthcare Workers / Health Care Management Science. *(Under Preparation)* Conference 1. Date: March – April 2025 (Washington D.C., USA) Name: 2025 ASPA Annual Conference Title: Turnover Intention of Healthcare Workers: A Case Study in Hong Kong 2. Date: March 2026 (Hollywood, USA) Name: 2026 ASPA Annual Conference

	Title: Job Stress and Burnout among Healthcare Professionals in Hong Kong External Grant 1. GRF Project Title: Decision of Leave: A Case-control Study of Turnover among Healthcare Professionals in Hong Kong (Date of Application: October 2023; Total Budget Requested: $960,620)
Project Leader	**Dr Man Yu Bon, SES**
Project Title *(Ref No.)*	Study of Biotransformation of Food Waste and Selenium by Fly Larvae Used for Animal Feed *(IRS-6)*
Output:	Journal / Book 1. Zheng, C., **Man, Y. B**., Wong, M. H., & Cheng, Z.* **(2024)**. Optimizing food waste bioconversion with sodium selenite-enhanced Lucilia sericata maggots: a sustainable approach for chicken feed production and heavy metal mitigation. *Environmental Geochemistry and Health*, *46*(12), 508. 2. Cai, J.*, Liu, S., **Man, Y. B.**, Xu, X., Yang, Z., Xu, C., ... & Cheng, Z.* **(2025)**. Sequential adsorption-oxidation pulses for alternating electrochemical advanced pretreatment of wastewater containing tetracyclines. *Chemical Engineering Journal*, *507*, 160725. 3. Zheng, C., Cheng, Z.*, Chen, Z. L., **Man, Y. B**., Liu, Q., Zhao, L. L., ... & Wong, M. H. **(2025)**. Fate and health implications of polycyclic aromatic hydrocarbons in a sustainable food waste recycling system using housefly maggots and Nile tilapia. *Aquaculture*, *607*, 742675. External Grant 1. GRF Project Title: Activated Charcoal/Biochar Supplemented Diet to Limit Uptake of Microplastics and Metals in Nile Tilapia: Effect on Gut Microbiota and Liver Metabolisms (Date of Application: November 2024; Total Budget Requested: $898,880) Other Impact / Output 1. Collaborated with Sichuan Agricultural University.

Project Leader	**Dr Yuen Man Wai, MIT**
Project Title *(Ref No.)*	The Cauchy Problem for Isothermal Euler Equations *(IRS-8)*
Output:	Journal / Book 1. An, H.*, Hou, L.*, & **Yuen, M**. **(2024)**. The extended Adomian decomposition method and its application to the rotating shallow water system for the numerical pulsrodon solutions. *Communications in Theoretical Physics*, 76(12), 125004. 2. Chen, J., Li, B.*, & **Yuen, M. (2025)**. Nonlinear interaction multi-domain physics-informed neural networks for the hybrid rogue wave and breather solutions of the nonlinear Schrödinger equation. *Communications in Nonlinear Science and Numerical Simulation*, *151*, 109049. 3. Guo, X., Li, B.*, & **Yuen, M. (2025)**. Resonant collisions of lump chains in the (2+1)-dimensional Yu-Toda-Sasa-Fukuyama equation. *Physica Scripta*, *100*(7), 075223. 4. On Lifespan Estimates of Classical Solutions of Isothermal Euler Equations in High Dimensions, Pre-print *(Under Preparation)* External Grant 1. GRF Project Title: The Life Span of the Initial Value Problem of Isothermal Euler Equations (Date of Application: October 2024; Total Budget Requested: $501,000)
Project Leader	**Dr Zhang Qiaoping, MIT**
Project Title *(Ref No.)*	The Relationship Between Mathematics Teachers Noticing and Their Teaching Practice: An Exploratory Study *(IRS-9)*
Output:	Journal / Book 1. Yun, H., **Zhang, Q***., Cao, W., & Zhang, X. **(2024)**. Teacher noticing within the context of lesson study: a systematic review and prospective trends. *International Journal for Lesson & Learning Studies*, *13*(4), 361-381. 2. How Can We Improve Teacher Training to Enhance Teaching Skills? A Meta-Analysis of Teacher Noticing Interventions. *(Under Review)*

	Conference 1. Date: November 2023 (Shanghai) Name: The Third International Symposium on Mathematics Education Engineering and Sustainable Development (CEESD2023) Title: A New Perspective on Mathematics Classroom Observation: A Comparative Study of Novice and Experienced Teachers' Noticing 2. Date: July 2024 (Auckland, New Zealand) Name: The 47th Conference of the International Group for the Psychology of Mathematics Education Engineering and Sustainable Development (CEESD2023) Title: Teachers Noticing in the Mathematics Classroom: Insights from TRU Math Framework 3. Date: July 2024 (Sydney, Australia) Name: 15th International Congress on Mathematical Education Title: Improving Preservice Mathematics Teachers' Noticing Skills: An Intervention Study 4. Date: October 2024 (Changchun) Name: International Conference on Educational Transformation under the Idea of Sustainable Development Title: Technology Enabled Teacher Noticing: Opening a New Era in Teacher Education 5. Date: November 2024 (Haikou) Name: 2024 Academic Annual Meeting of the Chinese Society of Mathematical Education Title: Topic Study Group on New Pathways for Improving Mathematics Teaching Skills: A Series of Studies on Teacher Noticing External Grant 1. GRF Project Title: Exploring Mathematics Teachers' Professional Noticing of Exemplary Mathematical Lessons: A Comparative Study of Mainland China and Hong Kong (Date of Application: October 2024; Total Budget Requested: $760,244) Other Impact and Output 1. Collaborated with East China Normal University and Wuhan City

	Vocational College.

Interdisciplinary Research Scheme (IDS)	
Project Leader	**Dr Sun Daner, MIT**
Project Title *(Ref No.)*	Exploring the Development of Students' Computational Thinking through Robotics Supported STEM Education from Kindergarten to Primary schools: A Learning Progression Analysis *(IDS-3)*
Output:	Journal / Book 1. **Sun, D.***, Keane, T., & Lee, J. C. K. **(2025)**. Guest editorial: Intelligent robotics in STEM education: Pedagogical innovation, higher-order thinking, and interdisciplinary competence. *Educational Technology & Society*, *28*(4), 205-207. Conference 1. Date: December 2023 (Matsue, Japan) Name: The 31st International Conference on Computers in Education Title: Empowering Students Computational Thinking through Robotics-enabled STEM Education: A Design Thinking Approach External Grant 1. GRF Project Title: Exploring the Developmental Trajectory of Robotics Literacy and Computational Thinking in Aerospace-Focused STEM Education: Interrelationships and Influencing Factors (Date of Application: November 2024; Total Budget Requested: $612,661)

International Collaborative Research Scheme (ICRS)	
Project Leader	**Dr Deng Wenjing, SES**
Project Title *(Ref No.)*	Identification and Evaluation of Phenolic Halogenated Disinfection By-Products in Water Systems in Hong Kong And Spain *(ICRS-1)*
Output:	Journal / Book 1. **Deng, W. J.***, Yi, Z., & Lee, J. C. K.* **(2024)**. The demographic variation in nutrition knowledge and relationship with eating attitudes among Chinese university students. *International Journal of Environmental Research and Public Health*, *21*(2), 159. 2. Li, N., Liu, J., Ying, G., Lee, J. C. K., Leung, T. F., Covaci, A.*, & **Deng, W. J.* (2024)**. Endocrine disrupting chemicals in children's and their parents' urine: Is the exposure related to the Chinese and Western lifestyle?. *International Journal of Hygiene and Environmental Health*, *259*, 114383. Conference 1. Date: September 2023 (Hong Kong) Name: DIOXIN 2023 Title: Pollution Characteristics and Ecological Risk of Disinfection Byproducts in Natural Waters in Hong Kong External Grant 1. GRF Project Title: Revealing the Source and Health Risks of Perfluorinated Compounds Posed on Chinese Children: A Combination of Experimental and Machine Learning Approaches? (Date of Application: November 2023; Total Budget Requested: $1,207,280) Other Impact / Output 1. Collaborated with South China Normal University and Zhejiang Normal University.
Project Leader	**Dr Fok Lincoln, SES**
Project Title *(Ref No.)*	Factors Affecting Visitor's Behavioural Intention towards "Leave No Trace" at Hong Kong Country Parks: A Study during COVID-19 Pandemic *(ICRS-2)*
Output:	Journal / Book 1. Lam, T. W., Fang, W., Ma, A. T., Zhang, K., Cheung, L. T., Lo, A. Y., & **Fok, L***. **(2025)**. Explaining the intention to practice "Leave No

	Trace" in Hong Kong's country parks: The roles of environmental self-identity, personal moral norms and awareness of consequences. *Journal of Outdoor Recreation and Tourism*, *51*, 100916.
Project Leader	**Prof Ho Wing Kei Keith, SES**
Project Title *(Ref No.)*	Effective Solar-driven Nitric Oxides Abatement through Single-atom (Pt, Pd, and Bi) Photocatalysis *(ICRS-3)*
Output:	Journal / Book 1. Xia, Y., Zhu, B., Li, L., **Ho, W.***, Wu, J., Chen, H.*, & Yu, J.* **(2023)**. Single-atom engineering of covalent organic framework for photocatalytic H2 production coupled with benzylamine oxidation. *Small*, *19*(35), 2301928. 2. Xia, Y., Yang, H., **Ho, W.***, Zhu, B., & Yu, J.* **(2024)**. Promoting the photocatalytic NO oxidation activity of hierarchical porous g-C3N4 by introduction of nitrogen vacancies and charge channels. *Applied Catalysis B: Environment and Energy*, *344*, 123604. External Grant 1. GRF Project Title: Study on the Control of Metal-Organic Framework Liquid Crystal Process and the Tandem Catalysis Mechanism of Photocatalytic Denitrification (Date of Application: November 2024; Total Budget Requested: $1,200,000)
Project Leader	**Dr Leung Chi Fai, SES**
Project Title (Ref No.)	Oxidation of Ammonia by 3D Metal Molecular Catalysts
Output:	Journal / Book 1. Pan, C., Ho, P. Y., Huang, W. Q., Huang, G. F., Zhang, L. H., Tritton, D. N., ... **Leung, C. F.*** & Ni, W. X.* **(2025)**. Transformable cis–trans isomerism of ruthenium (ii) complexes with photoactivated anticancer activity. *Inorganic Chemistry Frontiers*, *12*(5), 1969-1978. 2. Wu, C., Mu, J., Wang, X., Ho, P. Y., Zhou, M.*, Yang, C., **Leung, C. F.**, ... & Ho, W. K.* **(2025)**. Tuning Bismuth Metal–Organic Framework Topology for Enhanced Photocatalytic NO Oxidation. *Small*, *21*(29), 2502116. 3. An Efficient Nickel Electrocatalyst NH_3-to-N_2 Oxidation *(Under*

	Preparation) Conference: 1. Date: May 2025 (Kyoto, Japan) Name: 19th International Symposium on Macrocyclic and Supramolecular Chemistry 2025 (ISMSC 2025) Title: Modifiable Cobalt (II) Tripodal Iminopyridine Complexes as the Efficient Catalysts for Light-Driven Water Reduction External Grant 1. GRF Project Title: Two-photon Excited Photocatalysts for Red/NIR-light Promoted CO2 reduction and Chromoselective Photoredox Transformation (Date of Approval: June 2024; Total Budget Approved: $667,878)
Project Leader	**Prof Song Yanjie, MIT**
Project Title (Ref No.)	Developing a Multi-Model Learning Analytics Approach to Understanding Students' Social Presence in the Metaverse – 'Learningverse' *(ICRS-5)*
Output:	Conference 1. Date: June 2023 (Hong Kong) Name: MetaACES 2023 – Workshop on Metaverse in Education Title: Development of an Avatar Expression Remix System to Enhance Affective Social Presence in the Metaverse 2. Date: November 2023 (Chongqing) Name: GCCCE 2024 – Global Chinese Conference on Computers in Education Title: Digital Human Teacher as AI Scaffold for SSRL in the Metaverse: A Case Study with Multimodal Learning Analytics 3. Date: December 2023 (Matsue, Japan) Name: ICCE 2023 – 31st International Conference on Computers in Education Title: A Holistic Visualisation Solution to Understanding Multimodal Data in an Educational Metaverse Platform – Learningverse 4. Date: December 2024 (Manila, Philippines) Name: ICCE 2024 – 32nd International Conference on Computers in Education Title: Developing a Multimodal Learning Analytics Approach to

	Examine Students' Cognitive Presence and Metacognition in a Metaverse Environment External Grant 1. GRF Project Title: Examining Social, Cognitive and Teaching Presences and Learning Outcomes in the Metaverse via an Intelligent MMLA Approach (Date of Approval: June 2024; Total Budget Approved: $757,100) Other Impact / Output 1. Collaborated with Prof Dragan Gasevic (Monash University) and Prof Mutlu Cukurova (University College London) in learning analytics and AI education.
Project Leader	**Dr Tan Weiqiang, SSPS**
Project Title (Ref No.)	Directors' Equity-Based Compensation and Stock Price Crash Risk *(ICRS-6)*
Output:	Journal / Book 1. Qian, Y.*, Qin, B.*, **Tan, W***., & Yao, D. T*. **(2025)**. Skin in the game: Does outside directors' equity-based compensation induce or mitigate stock price crash risk?. *Journal of Accounting and Public Policy*, 51, 107308. External Grant 1. 2024/25 PROCORE-France/Hong Kong Joint Research Scheme Project Title: Cross-border Transmission of Climate Risks: The Perspective of Trade Networks (Date of Application: June 2024; Total Budget Requested: $58,000)
Project Leader	**Dr Tsang Yiu Fai Chris, SES**
Project Title *(Ref No.)*	Sustainable Valorization of Mixed Plastic Wastes into Syngas and Pyrolytic Oil for Biosynthesis of Polyhydroxyalkanoate (PHA)-based Bioplastics *(ICRS-7)*
Output:	Journal / Book 1. Kim, J. H., Lee, D. J., Lee, T., Kim, J. Y., **Tsang, Y. F.***, & Kwon, E. E.* **(2024)**. Reactivity of carbon dioxide during pyrolysis of paper-plastic composite. *Cellulose*, *31*(6), 3447-3463. 2. Lee, J.*, Park, C., **Tsang, Y. F.**, & Andrew Lin, K. Y.* **(2024)**. Towards sustainable production of polybutylene adipate terephthalate: non-

	biological catalytic syntheses of biomass-derived constituents. *ChemSusChem*, *17*(23), e202401070. 3. Yang, Y., Wu, R. S. S., & **Tsang, Y. F.* (2024)**. Revealing removal mechanisms of target personal care products in secondary wastewater treatment plants. *Journal of Water Process Engineering*, *67*, 106074. 4. Kwon, D., Kim, J. Y., Song, H., Lee, J., **Tsang, Y. F.***, & Kwon, E. E.* (2025). CO2-mediated pyrolysis for syngas generation from wood-plastic composite waste. *Energy*, *319*, 134917. Conference 1. Date: December 2023 (Matsue City, Japan) Name: The 8th International Conference on Environmental Engineering and Sustainable Development (CEEDS) Title: Rapid Detection and Quantification of Microplastics in Wastewater: Implication to Future Application. External Grant 1. GRF Project Title: A Novel Pyrolytic Conversion Approach for Production of Polyhydroxyalkanoate (PHA)-based Bioplastics with Specific Properties Using Mixed Plastic Waste from Different Sources (Date of Application: October 2024; Total Budget Requested: $1,169,000) Other Impact / Output 1. Excellent Poster Presentation, the 8th CEESD: Cheng, Y. L., Siu, Y. M., **Tsang, Y. F.* (2023, December)**. Rapid detection and quantification of microplastics in wastewater: Implication to future application. 2. Excellent Poster Presentation, the 8th CEESD: Uddin, M., **Tsang, Y. F.* (2023, December)**. Occurrence and removal of the associated toxic chemical and absorbed contaminants of MPs in wastewater treatment plants in Hong Kong. 3. 2023 Gold Medal, the 3rd Asia Exhibition of Innovations and Invention Hong Kong

	4. 2023 Bronze Medal, International Trade Fair • Ideas • Inventions • New Products (iENA) in Germany 5. 2023 Organizer's Choice Award, the 8th International Invention Competition in Canada (iCAN) 6. 2023 Gold Medal, the 8th iCAN 7. 2023 Certificate of Excellence, the 8th iCAN 8. Collaboration with Hanyang University, South Korea Project Title: Development and Validation of Rapid Quantification of Microplastics and Weathered Microplastics in Water Environments and Terrestrial Ecosystems in Fung Yuen Valley SSSI (PI: HK Private Fund – Industries; Amount: $250,000) 9. Collaboration with Jeonbuk University, South Korea Project: Stabilization Mechanisms of Endogenous Heavy Metals in Biochar Derived from Livestock Manure (PI: Dean's Research Fund; Amount: $299,992)
Project Leader	**Dr Tse Choi Yeung Andy, HPE**
Project Title (Ref No.)	Investigating the Relationship Between Walk Onset and Language Development in Infants *(ICRS-8)*
Output:	Journal / Book 1. Walking into Language: How Caregiver Engagement Shapes Infant Vocabulary Development *(Under Preparation)* Conference 1. Date: August 2024 (Sapporo, Japan) Name: ASAPE Sapporo 2024 Title: How Walk Onset Affects Infant-Caregiver Interactions and Language Development in Infants with Elevated Likelihood of Developing ASD: A Pilot Study External Grant 1. GRF Project Title: How Walk Onset Influences Language Development in Children with Elevated Likelihood of ASD? (Date of Approval: June 2024; Total Budget Approved: $969,808)

Project Leader	**Prof Yeung Chi Ho Bill, SES**
Project Title (Ref No.)	Bridging Statistical Physics and Transportation Science – Optimal Route Coordinator for Autonomous Vehicles in Mixed-Autonomy Traffic *(ICRS-9)*
Output:	Journal / Book 1. Po, H. F., & **Yeung, C. H.* (2025)**. Re-routing game: The inadequacy of mean-field approach in modeling the herd behavior in path switching. *Physica A: Statistical Mechanics and its Applications*, *658*, 130266. 2. Zhang, A., **Yeung, C. H.**, Zhao, C., Fan, Y., & Zeng, A.* **(2025)**. Targeted avoidance in complex networks. *Physical Review Letters*, *134*(4), 047401. External Grant 1. GRF Project Title: Understanding Exploration-exploitation Dilemma and Decision-led Rare Events: Bridging Statistical Physics and Multi-armed Bandits, from Theory to Algorithms and Application (Date of Application: November 2024; Total Budget Requested: $740,500)
Project Leader	**Prof Chow Cheuk Fai Stephen, SES**
Project Title (Ref No.)	Toxic Pollutant Monitoring and Removal by Manganese(II) and Cobalt(II) Hexacyanoferrates Modified g-C3N4/TiO2 *(ICRS-10)*
Output:	Journal / Book 1. **Chow, C. F.***, Tang, Q., Gong, C. B.*, & Mung, S. W. Y. **(2024)**. Indicator-catalyst displacement assay for tandem detection and signal amplification of dimethoate organophosphate pesticide. *Sensors and Actuators B: Chemical*, *405*, 135335. External Grant 1. GRF Project Title: Development of Catalysis-Driven Indicator Displacement Assays (CD-IDAs) for Selective Detection of Organic Pesticides (Date of Application: November 2024; Total Budget Requested: $860,460)