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**Notes:**

- **Section 1 should be less than 50 pages, Arial 11 point font.**
- **If needed, additional material can be included as Appendices.**

# **CURRICULUM VITAE**

Dr P. N. Suganthan  
Associate Professor  
School of EEE

## **Academic Qualifications**

- 1996 PhD (EEE), NTU, Singapore  
1994 MA, University of Cambridge  
1990 BA (Hons) in Electrical and Information Engineering, University of Cambridge

## **Professional Qualifications / Memberships**

- 2015 - Present Fellow of the IEEE USA

## **Summary of Working Experience**

- Jan 2004 - Present Associate Professor, School of EEE, NTU  
Jul 1999 - Dec 2003 Assistant Professor, School of EEE, NTU  
Oct 1996 - Jul 1999 Lecturer, University of Queensland, Australia  
Aug 1995 – Sept 1996 Research Assistant, University of Sydney, Australia  
Oct 1993 – Jul 1995 Teaching Assistant, EEE NTU, Singapore  
Sep 1992 – Oct 1993 Research Engineer, Gintic (Former SimTech), Singapore

## **Academic Honours and Awards**

<b>Year</b>	<b>Academic Honour / Award</b>
1987-1990	Recipient, ODA (UG) Scholarship, University of Cambridge, UK
1988, 1989	Recipient, Wyatt Engineering Prize, University of Cambridge, UK
1988, 1989, 1999	Recipient, Christ's College Book Prize, University of Cambridge, UK
1990	Recipient, ORS Cambridge Christ's College, and Cambridge Commonwealth Trust Scholarships, 1990-92, UK.

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## **RESEARCH SUMMARY**

### **Key Areas of Research**

Swarm and evolutionary algorithms, Pattern recognition, Forecasting, Randomized neural networks, Deep learning and Applications of swarm, evolutionary & machine learning algorithms

### **Research Awards / Recognition**

<b>Year</b>	<b>Research Award / Recognition</b>
2015 to 2020	Highly Cited Researcher (SCI) in Computer Science
2012	Outstanding Paper Award, IEEE Trans. On Evolutionary Computation
2020	Ranked 200-300 among all-time Computer Science and Electronics researchers: <a href="http://www.guide2research.com/scientists/page-4">http://www.guide2research.com/scientists/page-4</a>
2020	Honorary doctorate (i.e. Doctor Honoris Causa), University of Maribor, Slovenia

### **Keynote Presentations**

1. Delivered an online keynote for SoCTA 2020 in Dec., India
2. Delivered an online keynote at CISPSSE 2020 (July), Odisha, India.
3. Delivered an online keynote at ICAC-2020, Nov., India.
4. Delivered an online keynote at ICNC 2020, Dec., China
5. Delivered an online keynote at ICSISCET-2020, Dec. , India
6. Delivered online keynote at 5th International Conference on Computational Intelligence and Applications, Beijing, China.
7. Delivered a skype keynote talk for ARGENCON 2020, Argentina, Dec 2020
8. Delivered a skype keynote talk for CMA-2019 at IIT, Indore, India, Nov, 2019.
9. Delivered a keynote at BICTA 2019 in Zhengzhou, in Nov 2019.
10. Delivered a skype keynote talk for MISP-2019 at IIIT, Allahabad, India, Sept, 2019.
11. Delivered a skype talk for AIML-2019 at NIT, Arunachal Pradesh, India, Sept, 2019.
12. Delivered a keynote at SEMCCO 2019 in Maribor, Slovenia, in July 2019.
13. Delivered a keynote talk at ICAIECES 2019 in SRM Uni, India, April 2019.
14. Delivered John McCarthy Memorial Lecture in Hyderabad, India in Nov 2018.
15. Delivered a plenary talk at IEEE SSCI 2018, Bengaluru, India, in Nov 2018
16. Delivered **2 keynotes** at DLAI JCSI in Dec. 2018, Bangkok, Thailand, 2018.
17. Delivered a keynote talk via skype at IC3IoT 2018, Chennai, India in Feb 2018.
18. Delivered 2 talks at Zhengzhou Uni, China in November 2017
19. Delivered 2 talks at HUST, China in November 2017
20. Delivered a keynote at CICBA 2017 in Kolkata, India, in Mar. 2017.
21. Delivered a keynote at SocProS 2016 in Topiala, India, in Dec. 2016.
22. Deliver a keynote at ICICA 2016 in Pune, India, in Dec. 2016.
23. Delivered a keynote at ICNC – FSKD 2016 in Aug 2016 in Changsha, PRC.
24. Delivered a keynote at ICHSA 2015 in Seoul, South Korea, in Aug 2015.
25. Delivered a keynote at ICSI 2015 & BRICS CCI-2015, Beijing, China in June 2015
26. Delivered a keynote at ICGEC 2014, PR-China in Oct 2014
27. Delivered an Invited talk (equivalent to a Plenary) at NOSTRADAMUS 2014, in Ostrava in Czech Republic in June 2014.
28. Delivered an Invited talk (equivalent to a Plenary) at MENDEL 2014 in Brno in Czech Republic in June 2014.
29. Delivered a keynote talk at SHAASTRARTH 2014, Raipur, India in March 2014.
30. Delivered a Plenary at ICIET 2014 in Madurai in India in March 2014.
31. Delivered an Invited talk (equivalent to a Plenary) at ICAISC 2013 in Poland, in June 2013.
32. Delivered a keynote at SoCPar 2012 in Brunei, in Dec 2012.
33. Plenary speaker at TPNC 2012 in Spain in Oct 2012.
34. Plenary speaker at SOCO 2012 Sept 2012, Ostrava, Czech Republic
35. Plenary Speaker at SEMCCO 2010, Chennai, India, Dec 18, 2010.

36. Plenary Speaker at BICA 2009, Bhubaneswar, India, Dec 21, 2009.
37. Plenary speaker at The 2008 International Workshop on Nature Inspired Computation and Applications, USTC, China. (This workshop featured **plenary** type talks only)

### **Invited Presentations**

1. Delivered online talk at ISIC 2020, Sept.India
2. Delivered an online tutorial at IJCNN 2020 (Scotland) in July.
3. Delivered 2 online talks for IEEE CIS School at Indore, India. Nov 2020.
4. Delivered an online talk for IEEE CIS Hyderabad, Dec 2020.
5. Delivered an IEEE CIS DLP talk at University of Maribor, Slovenia, in Jan 2020.
6. Delivered an IEEE CIS DLP talk at University of Zagreb, Croatia, in Jan 2020.
7. Delivered **3 IEEE CIS DLP talks** in Melbourne, Australia: RMIT, Swinburne University and Federation University. in Dec 2019.
8. Delivered an IEEE CIS DLP talk at University of Waterloo, in Nov. 2019.
9. Delivered a skype talk for IEEE CIS Summer School at IIIT, Allahabad, India, Aug, 2019.
10. Delivered a 1-hour lecture at WAIC 2019 in July in Shanghai (organized by Fudan Uni)
11. Delivered **3 lectures** at DeepLearn 2019 in Warsaw, Poland in July 2019.
12. Delivered a tutorial at IJCNN 2019 in Budapest, Hungary in July.
13. Delivered a talk at IEEE CIS Summer School in Hyderabad in Nov 2018.
14. Delivered a tutorial talk at IEEE SSCI 2018, Bengaluru, India, in Nov 2018
15. Delivered **3 lectures** at DeepLearn 2018 in Genoa, Italy in July 2018.
16. Delivered **2 lectures** at MESS 2018, Sicily, Italy in July 2018.
17. Delivered a tutorial at CEC 2018 in Brazil in July.
18. Delivered a tutorial at IJCNN 2018 in Brazil in July.
19. Delivered IEEE CIS DLP in Sydney (UTS), June 2018.
20. Delivered IEEE CIS DLP in Hong Kong (HKBU), June 2018.
21. Delivered CityU-CS Research Student Workshop in Hong Kong, June 2018.
22. Delivered technical seminar at U of Macau, June 2018.
23. Invited talk at DSO, Singapore, May 2018
24. Delivered **2 talks at IMS**, NUS in Feb 2018.
25. Delivered a lecture at IEEE CIS school at IIT-Delhi in Dec 2017.
26. Delivered a tutorial at ICAPR 2017 in Bangalore, in Dec 2017.
27. Delivered a lecture at RACI 2017 at ISI-Kolkata in Sept 2017.
28. Delivered two talks at IIT Indore, India for CMOCI 2017 in July 2017 on optimization and non-iterative learning under NTU-India Connect program.
29. Delivered an invited talk via skype on Multiobjective Evolutionary Algorithms on 5<sup>th</sup> July 2017 to Nirma University, Gujarat, India.
30. Delivered 2 talks at U of Cambridge, UK in June 2017.
31. Delivered a tutorial on differential evolution at IEEE CEC 2017 in Spain in June 2017.
32. Delivered a lecture at IEEE CIS Summer School in Bangalore, India in Aug 2016.
33. Delivered a tutorial at CEC 2016, Vancouver, Canada in July 2016 (Jointly with Profs Mostafa Ali and Mallipeddi).
34. Delivered a lecture at IEEE CIS Winter School in Gujarat, India in Mar 2016.
35. Delivered a tutorial at CEC 2015, Sendai, Japan in May 2015.
36. Delivered a lecture at IEEE CIS Summer School in Jaipur, India in Mar 2015.

37. Delivered a tutorial at CEC 2014, Beijing, PR-China in July 2014.
38. Delivered an invited talk (1 hour) at OPTENG-2014 Workshop in Bankura, West Bengal, India in May 2014.
39. Delivered a tutorial at GECCO 2013 in July in Amsterdam, The Netherlands.
40. Delivered a tutorial at CEC 2013 in June in Cancun, Mexico.
41. Lectured at IEEE SMC Cybernetics Summer School in Ostrava, Czech Republic, September 2012.
42. Presented a tutorial on “Differential Evolution” at IEEE CEC 2012 in Brisbane, Australia, June 2012.
43. Delivered 2 invited talks on “Differential Evolution” and “Particle Swarm Optimization”, on 27 Dec 2011 at SRM University in India.
44. Presented a tutorial on “Learning Approaches for Search and Optimization Algorithms”, at *11<sup>th</sup> Hybrid Intelligent Systems Conference (HIS-2011)*, in Malacca, Malaysia, in Dec 2011.
45. Presented a tutorial on “Differential Evolution”, at *IEEE Symposium on Differential Evolution (IEEE SDE-2011)*, in Paris, France, in April 2011 (jointly with Dr S Das).
46. Presented a tutorial on “Evolutionary Programming with Diversity Enhancement and Ensemble Strategies,” *IEEE Multi-Criteria Decision Making (MCDM-2009)*, in Nashville Tennessee, in Mar 2009
47. Presented a tutorial on “Particle Swarm Optimization and Differential Evolution” at *IEEE Congress on Evolutionary Computation (CEC2007)*, in Singapore in September 2007.
48. Presented a tutorial on “Recent Advances in Particle Swarm Optimization”, at *IEEE Swarm Intelligence Symposium (SIS2007)*, in Hawaii in April 2007. Presented a Tutorial on “Recent Advances in Real Parameter Optimization” at *Int. Conf. on Simulated Evolution and Learning (SEAL '06)*, Hefei, China, on 15, Oct. 2006. (Jointly with Dr Qin Kai, my former PhD student)
49. Presented a Tutorial on “Evolutionary algorithms for pattern analysis” at *Int. Conf. on Neural Information Processing (ICONIP'04)*, Calcutta, India, on 21<sup>st</sup> of Nov. 2004. (Jointly with Dr Qin Kai, my former PhD student).

### **Research Funding**

<For Co-PI grants, or where grants are from larger block grants to NTU, pls indicate both share of grant and total grant amount, e.g. “300,000 (600,000)”>

### **External Grants**

<b>Role</b>	<b>Year</b>	<b>Project Title</b>	<b>Amount (\$\$)</b>	<b>Source of Grant</b>
PI	2018 - 2021	Track 2 - Machine Learning Algorithm Development	180,000	DSO National Laboratories
PI	2013 - 2020	IRP 4.4 Cambridge Centre for Carbon Reduction in Chemical Technology (C4T)	537,816.00	NRF CREATE
PI	2011 - 2013	Remanufacturing Scheduling System	475,340.00	A*STAR SERC Innovations in Remanufacturing Programme
PI	2011-2012	Sub Project 3 - Swarm Computing Techniques for Geolocation and	46,000	DRTech

		Tracking in Mixed LOS/NLOS Environments		
PI	2010 - 2011	Sub Project 2 - Nonconvex Based Optimization for Robust Adaptive Beamforming	18,000	DRTech
PI	2005 - 2009	Development and Applications of Novel Evolutionary Algorithms	707,940.00	A*STAR, SERC

### Internal Grants

Role	Year	Project Title	Amount (S\$)	Source of Grant
PI	2002 - 2006	Hierarchical Topology Conserving Maps in VLSI with Applications in Medical Imaging.	32,775.00	MOE AcRF Tier 1

### Citation Summary (according to the citation report at Appendix 1)

Database	Citation Count		H-index
	without self-citations	with self-citations	
Scopus		29,900	77
Web of Science (SCI)	22,440	23,360	69
Google Scholar		47,800	94

### Publications (in chronological order, starting with the most recent)

- Bold Denotes main author  
 (the person who has made the most scientific/intellectual contribution; refer to [Note on Main Author file](#))
- ^ Denotes corresponding author
- ~ Denotes PI/Supervisor/Team Lead
- \*\* Denotes directly supervised research staff, i.e. POs, RAs, RFs, postdocs, etc.
- \* Denotes PhD students (supervised or co-supervised)
- ## Denotes Tier 1A papers (1 Jan 18 – 31 Dec 20)
- # Denotes Tier 1B papers (1 Jan 18 – 31 Dec 20)

### Journal Papers

Last 3 years (1 Jan 2018 – 31 Dec 2020)	Tier 1	39
Current year (1 Jan 2020 – 31 Dec 2020)	Tier 1A	4
	Tier 1B	2

### Journal Papers

- W Qiu, J Zhu, G Wu, H Chen, W Pedrycz, PN Suganthan, Ensemble Many-Objective Optimization

- Algorithm Based on Voting Mechanism, IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2021. (1A)
2. PP Biswas, P Arora, R Mallipeddi, PN Suganthan, BK Panigrahi, Optimal placement and sizing of FACTS devices for optimal power flow in a wind power integrated electrical network, Neural Computing and Applications, 1-22, 2021. (1B)
  3. H Liu, X Li, M Fan, G Wu, W Pedrycz, PN Suganthan, An Autonomous Path Planning Method for Unmanned Aerial Vehicle Based on a Tangent Intersection and Target Guidance Strategy, IEEE Transactions on Intelligent Transportation Systems, 2021. (1A)
  4. V Palakonda, R Mallipeddi, PN Suganthan, An ensemble approach with external archive for multi- and many-objective optimization with adaptive mating mechanism and two-level environmental selection, Information Sciences 555, 164-197, 2021. (1B)
  5. PN Suganthan, R Katuwal, On the origins of randomization-based feedforward neural networks, Applied Soft Computing, 107239, 2021. (1A)
  6. C Yue, PN Suganthan, J Liang, B Qu, K Yu, Y Zhu, L Yan, Differential Evolution Using Improved Crowding Distance for Multimodal Multiobjective Optimization, Swarm and Evolutionary Computation, 100849, 2021. (1A)
  7. YY Huang, QK Pan, JP Huang, PN Suganthan, L Gao, An improved iterated greedy algorithm for the distributed assembly permutation flowshop scheduling problem, Computers & Industrial Engineering 152, 107021, 2021. (1B)
  8. W Qiu, J Zhu, G Wu, M Fan, PN Suganthan, Evolutionary many-Objective algorithm based on fractional dominance relation and improved objective space decomposition strategy, Swarm and Evolutionary Computation 60, 100776, 2021. (1A)
  9. EH Houssein, AG Gad, YM Wazery, PN Suganthan, Task Scheduling in Cloud Computing based on Meta-heuristics: Review, Taxonomy, Open Challenges, and Future Trends, Swarm and Evolutionary Computation, 100841, 2021. (1A)
  10. EH Houssein, MM Emam, AA Ali, PN Suganthan, Deep and machine learning techniques for medical imaging-based breast cancer: A comprehensive review, Expert Systems with Applications, 114161, 2021. (1A)
  
  11. KZ Gao, ZM He, Y Huang, PY Duan, PN Suganthan, A survey on meta-heuristics for solving disassembly line balancing, planning and scheduling problems in remanufacturing, Swarm and Evolutionary Computation 57, 100719, 2020 (1A)
  12. Abhishek Kumar, Guohua Wu, Mostafa Z. Ali, Rammohan Mallipeddi, **Ponnuthurai Nagaratnam Suganthan**, Swagatam Das, A Test-suite of Non-Convex Constrained Optimization Problems from the Real-World and Some Baseline Results, Swarm and Evolutionary Computation, 2020. (1A)
  13. MA Ganaie, M Tanveer, PN Suganthan, Oblique Decision Tree Ensemble via Twin Bounded SVM, Expert Systems with Applications 143, 113072, 2020. (1A)
  14. R Katuwal, **PN Suganthan**, L Zhang, Heterogeneous oblique random forest, Pattern Recognition 99, 107078, 2020. (1A)
  15. PP Biswas, PN Suganthan, R Mallipeddi, GAJ Amaralunga, Multi-objective optimal power flow solutions using a constraint handling technique of evolutionary algorithms, Soft Computing 24 (4), 2999-3023, 2020. (1B)
  16. M. Tanveer, A. Sharma, P.N. Suganthan, Least squares KNN-based weighted multiclass twin SVM, Neurocomputing, 2020. (1B)
  
  17. PP Biswas\*, **PN Suganthan**, R Mallipeddi, GAJ Amaralunga, Optimal reactive power dispatch with uncertainties in load demand and renewable energy sources adopting scenario-based approach, Applied Soft Computing 75, 616-632, 2019. (1A)
  18. D Yousri, D Allam, MB Eteiba, PN Suganthan, Static and dynamic photovoltaic models' parameters identification using Chaotic Heterogeneous Comprehensive Learning Particle Swarm Optimizer variants, Energy Conversion and Management 182, 546-563, 2019. (1A)
  19. PP Biswas\*, **PN Suganthan**, G Wu, GAJ Amaralunga, Parameter estimation of solar cells using datasheet information with the application of an adaptive differential evolution algorithm, Renewable Energy 132, 425-438, 2019. (1B)
  20. NH Awad\*, MZ Ali, R Mallipeddi, **PN Suganthan**, An efficient Differential Evolution algorithm for stochastic OPF based active-reactive power dispatch problem considering renewable generators, Applied Soft Computing 76, 445-458, 2019. (1A)
  21. Trinadh Pamulapati, Rammohan Mallipeddi, P. N. Suganthan, ISDE+ - An Indicator for Multi and Many-objective Optimization, IEEE Transactions on Evolutionary Computation, 2019. (1A)
  22. G Wu, R Mallipeddi, **PN Suganthan**, Ensemble strategies for population-based optimization algorithms—A survey, Swarm and Evolutionary Computation, 2019. (1A)
  23. H Li, K Deb, Q Zhang, **PN Suganthan**, L Chen, Comparison between MOEA/D and NSGA-III on

a set of many and multi-objective benchmark problems with challenging difficulties, Swarm and Evolutionary Computation, 2019. (1A)

24. A Majumder, D Laha, **PN Suganthan**, Bacterial foraging optimization algorithm in robotic cells with sequence-dependent setup times, Knowledge-Based Systems, 172, 104-122, 2019. (1A)
25. R Katuwal, PN Suganthan, Stacked autoencoder based deep random vector functional link neural network for classification, Applied Soft Computing 85, 105854, 2019. (1A)
26. M Tanveer, C Gautam, PN Suganthan, Comprehensive evaluation of twin SVM based classifiers on UCI datasets, Applied Soft Computing 83, 105617, 2019. (1A)
27. J Del Ser, E Osaba, D Molina, XS Yang, S Salcedo-Sanz, D Camacho, Swagatam Das, Ponnuthurai N Suganthan, Carlos A Coello Coello, Francisco Herrera, Bio-inspired computation: Where we stand and what's next, Swarm and Evolutionary Computation 48, 220-250, 2019. (1A)
28. M Tanveer, A Sharma, PN Suganthan, General twin support vector machine with pinball loss function, Information Sciences 494, 311-327, 2019. (1B)
29. PP Biswas\*, **PN Suganthan**, R Mallipeddi, GAJ Amaralunga, Optimal power flow solutions using differential evolution algorithm integrated with effective constraint handling techniques Engineering Applications of Artificial Intelligence 68, 81-100, 2018 (1B)
30. X Qiu\*, **PN Suganthan**, GAJ Amaralunga, Ensemble Incremental Learning Random Vector Functional Link Network for Short-term Electric Load Forecasting, Knowledge-Based Systems, 145, 182-196, 2018. (1A)
31. BY Qu, YS Zhu, YC Jiao, MY Wu, PN Suganthan, JJ Liang, A survey on multi-objective evolutionary algorithms for the solution of the environmental/economic dispatch problems Swarm and Evolutionary Computation 38, 1-11, 2018. (1A)
32. MZ Ali, NH Awad\*, **PN Suganthan**, AM Shatnawi, RG Reynolds, An improved class of real-coded Genetic Algorithms for numerical optimization, Neurocomputing 275, 155-166, 2018. (1B)
33. G Wu, X Shen, H Li, H Chen, A Lin, PN Suganthan, Ensemble of differential evolution variants, Information Sciences 423, 172-186, 2018 (1B)
34. PP Biswas\*, **PN Suganthan**, GAJ Amaralunga, Decomposition based multi-objective evolutionary algorithm for windfarm layout optimization, Renewable Energy 115, 326-337, 2018. (1B)
35. N Lynn\*, MZ Ali, **PN Suganthan**, Population topologies for particle swarm optimization and differential evolution, Swarm and Evolutionary Computation, 39, 24-35, 2018. (1A)
36. NH Awad\*, MZ Ali, **PN Suganthan**, Ensemble of Parameters in a Sinusoidal Differential Evolution with Niching-based population Reduction, Swarm and Evolutionary Computation, 39, 141-156, 2018. (1A)
37. AW Mohamed, PN Suganthan, Real-parameter unconstrained optimization based on enhanced fitness-adaptive differential evolution algorithm with novel mutation, Soft Computing, pp. 3215-3235, 2018. (1B)
38. PP Biswas\*, **PN Suganthan**, BY Qu, GAJ Amaralunga, Multiobjective economic-environmental power dispatch with stochastic wind-solar-small hydro power, Energy 150, 1039-1057, 2018. (1B)
39. B Huang, W Chen, X Wu, CL Lin, PN Suganthan, High-quality face image generated with conditional boundary equilibrium generative adversarial networks, Pattern Recognition Letters 111, 72-79, 2018. (1B)
40. MZ Ali, NH Awad\*, RG Reynolds, PN Suganthan, A balanced fuzzy Cultural Algorithm with a modified Levy flight search for real parameter optimization, Information Sciences 447, 12-35, 2018 (1B)
41. NH Awad\*, MZ Ali, R Mallipeddi, **PN Suganthan**, An improved differential evolution algorithm using efficient adapted surrogate model for numerical optimization, Information Sciences 451, 326-347, 2018 (1B)
42. R Katuwal\*, **PN Suganthan**, L Zhang, An Ensemble of Decision Trees with Random Vector Functional Link Networks for Multi-Class Classification, Applied Soft Computing, pp. 1146-1153, 2018 (1A)
43. Qiu\*, **PN Suganthan**, GAJ Amaralunga, Fusion of multiple indicators with ensemble incremental learning techniques for stock price forecasting, Journal of Banking and Financial Technology, 1-10, 2018.
44. PP Biswas\*, **PN Suganthan**, BY Qu, GAJ Amaralunga, Multiobjective economic-environmental power dispatch with stochastic wind-solar-small hydro power, Energy 150, 1039-1057, 2018. (1B)
45. NH Awad, MZ Ali, R Mallipeddi, **PN Suganthan**, An improved differential evolution algorithm using efficient adapted surrogate model for numerical optimization, Information Sciences 451, 326-347, 2018. (1B)
46. **PN Suganthan**, On non-iterative learning algorithms with closed-form solution, Applied Soft Computing 70, 1078-1082, 2018. (1A)

47. A Majumder, D Laha, **PN Suganthan**, A hybrid cuckoo search algorithm in parallel batch processing machines with unequal job ready times, *Computers & Industrial Engineering* 124, 65-76, 2018. (1B)
48. K Gao, Y Zhang, R Su, F Yang, PN Suganthan, MC Zhou, Solving Traffic Signal Scheduling Problems in Heterogeneous Traffic Network by Using Meta-Heuristics, *IEEE Transactions on Intelligent Transportation Systems*, 20 (9), 3272-3282, 2018. (1A)
49. K Gao, Y Zhang, Y Zhang, R Su, PN Suganthan, Meta-Heuristics for Bi-Objective Urban Traffic Light Scheduling Problems, *IEEE Transactions on Intelligent Transportation Systems*, 20 (7), 2618-2629, 2018. (1A)
50. K Gao, F Yang, MC Zhou, Q Pan, PN Suganthan, Flexible Job-Shop Rescheduling for New Job Insertion by Using Discrete Jaya Algorithm, *IEEE Transactions on Cybernetics*, 49 (5), 1944-1955, 2018. (1A)
51. MF Tasgetiren, D Kizilay, QK Pan, PN Suganthan, "Iterated greedy algorithms for the blocking flowshop scheduling problem with makespan criterion," *Computers & Operations Research* 77, 111-126, 2017. (1B)
52. NH Awad\*, MZ Ali, PN Suganthan, RG Reynolds, "CADE: A hybridization of Cultural Algorithm and Differential Evolution for numerical optimization," *Information Sciences* 378, 215-241, 2017. (1B)
53. L Zhang\*, **PN Suganthan**, Visual Tracking with Convolutional Random Vector Functional Link Network, *IEEE Transactions on Cybernetics*, 47 (10), 3243-3253, 2017. (1A)
54. S. Sundar, **P. N. Suganthan**, C. T. Jin, C. T. Xiang, C. C. Soon, "A hybrid artificial bee colony algorithm for the job-shop scheduling problem with no-wait constraint," *Soft Computing*, doi:10.1007/s00500-015-1852-9, 21 (5), 1193-1202, 2017. (1B)
55. MZ Ali, NH Awad\*, PN Suganthan, RG Reynolds, "An Adaptive Multipopulation Differential Evolution with Dynamic Population Reduction, *IEEE Transactions on Cybernetics*, 47 (9), 2768-2779, 2017. (1A)
56. BY Qu, JJ Liang, YS Zhu, PN Suganthan, Solving dynamic economic emission dispatch problem considering wind power by multi-objective differential evolution with ensemble of selection method, *Natural Computing*, 1-9, 2017
57. PP Biswas\*, **PN Suganthan**, GAJ Amaralunga, Minimizing harmonic distortion in power system with optimal design of hybrid active power filter using differential evolution, *Applied Soft Computing* 61, 486-496, 2017. (1A)
58. X Qiu\*, L Zhang\*, **PN Suganthan**, GAJ Amaralunga, Oblique random forest ensemble via Least Square Estimation for time series forecasting, *Information Sciences* 420, 249-262, 2017 (1B)
59. G Wu, W Pedrycz, PN Suganthan, H Li, Using variable reduction strategy to accelerate evolutionary optimization, *Applied Soft Computing* 61, 283-293, 2017 (1A)
60. L Zhang\*, **PN Suganthan**, Benchmarking Ensemble Classifiers with Novel Co-Trained Kernel Ridge Regression and Random Vector Functional Link Ensembles [Research Frontier], *IEEE Computational Intelligence Magazine* 12 (4), 61-72, 2017 (1A)
61. PP Biswas\*, R Mallipeddi, **PN Suganthan**, GAJ Amaralunga, A multiobjective approach for optimal placement and sizing of distributed generators and capacitors in distribution network, *Applied Soft Computing* 60, 268-280, 2017. (1A)
62. L Zhang\*, **PN Suganthan**, Robust visual tracking via co-trained Kernelized correlation filters, *Pattern Recognition* 69, 82-93, 2017. (1A)
63. A Rajasekhar, N Lynn, S Das, **PN Suganthan**, Computing with the collective intelligence of honey bees – A survey, *Swarm and Evolutionary Computation*, 2017. (1A)
64. PP Biswas\*, **PN Suganthan**, GAJ Amaralunga, Optimal power flow solutions incorporating stochastic wind and solar power, *Energy Conversion and Management* 148, 1194-1207, 2017 (1A)
65. N Lynn\*, **PN Suganthan**, Ensemble particle swarm optimizer, *Applied Soft Computing* 55, 533-548, 2017 (1A)
66. BY Qu, Q Zhou, JM Xiao, JJ Liang, PN Suganthan, Large-Scale Portfolio Optimization Using Multiobjective Evolutionary Algorithms and Preselection Methods, *Mathematical Problems in Engineering*, 2017
67. X Qiu\*, Y Ren, **PN Suganthan**, GAJ Amaralunga, Empirical Mode Decomposition based Ensemble Deep Learning for Load Demand Time Series Forecasting, *Applied Soft Computing* 54, 246-255, 2017 (1A)
68. Y Ren\*, **PN Suganthan**, N Srikanth, "A Novel Empirical Mode Decomposition With Support Vector Regression for Wind Speed Forecasting," *IEEE, 2014 Trans on Neural Networks and Learning Systems*, Volume: 27, Issue: 8, 1793 – 1798, Aug. 2016. (1A)

69. KZ Gao\*, **PN Suganthan**, QK Pan, TJ Chua, TX Cai, CS Chong, "Discrete harmony search algorithm for flexible job shop scheduling problem with multiple objectives," *Journal of Intelligent Manufacturing*, 27 (2), 363-374, 2016.
70. S Hui\*, **PN Suganthan**, "Ensemble and Arithmetic Recombination-Based Speciation Differential Evolution for Multimodal Optimization," *IEEE Trans on Cybernetics*, 46 (1), 64-74, 2016. (1A)
71. S. Das, S. S. Mullick, **P. N. Suganthan**, "Recent Advances in Differential Evolution - An Updated Survey," *Swarm and Evolutionary Computation*, Feb. 2016. (1A)
72. L. Zhang\*, **P. N. Suganthan**, "A Survey of Randomized Algorithms for Training Neural Networks," *Information Sciences*, Dol: 10.1016/j.ins.2016.01.039, Oct 2016.
73. Y. Ren\*, L. Zhang\*, and **P. N. Suganthan**, "Ensemble Classification and Regression – Recent Developments, Applications and Future Directions," *IEEE Computational Intelligence Magazine*, DOI: 10.1109/MCI.2015.2471235 , Feb 2016. (1A)
74. Y. Ren\*, **P. N. Suganthan**, N. Srikanth, G. Amaralunga, "Random Vector Functional Link Network for Short-term Electricity Load Demand Forecasting", *Information Sciences*, Nov 2016.
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  17. B. Y. Qu, J. J. Liang, P. N. Suganthan, Q. Chen, "Problem Definitions and Evaluation Criteria for the CEC 2015 Competition on Single Objective Multi-Niche Optimization", *Technical Report*, Computational Intelligence Laboratory, Zhengzhou University, Zhengzhou China and Technical Report, Nanyang Technological University, Singapore, Nov 2014.
  18. N. H. Awad, M. Z. Ali, J. J. Liang, B. Y. Qu and P. N. Suganthan, "Problem Definitions and Evaluation Criteria for the CEC 2017 Special Session and Competition on Single Objective Bound Constrained Real-Parameter Numerical Optimization," *Technical Report*, Nanyang Technological University, Singapore, November 2016.
  19. Guohua Wu, R. Mallipeddi, P. N. Suganthan, "Problem Definitions and Evaluation Criteria for

the CEC 2017 Competition and Special Session on Constrained Single Objective Real-Parameter Optimization", Technical Report, Nanyang Technological University, Singapore, November 2016.

20. K. V. Price, N. H. Awad, M. Z. Ali, P. N. Suganthan, "Problem Definitions and Evaluation Criteria for the 100-Digit Challenge Special Session and Competition on Single Objective Numerical Optimization," Technical Report, Nanyang Technological University, Singapore, November 2018.
21. H Li, K Deb, Q Zhang, PN Suganthan, Challenging Novel Many and Multi-Objective Bound Constrained Benchmark Problems, Technical Report, updated 11 Jan, 2018.
22. C. T. Yue, K. V. Price, P. N. Suganthan, J. J. Liang, M. Z. Ali, B. Y. Qu, N. H. Awad, and Partha P Biswas , Problem Definitions and Evaluation Criteria for the CEC 2020 Special Session and Competition on Single Objective Bound Constrained Numerical Optimization, Technical Report 201911, Computational Intelligence Laboratory, Zhengzhou University, Zhengzhou China And Technical Report, Nanyang Technological University, Singapore, 2019.
23. C. T. Yue, K. V. Price, P. N. Suganthan, J. J. Liang, M. Z. Ali, B. Y. Qu, N. H. Awad, and Partha P Biswas , Problem Definitions and Evaluation Criteria for the CEC 2020 Special Session and Competition on Single Objective Bound Constrained Numerical Optimization, Technical Report 201911, Computational Intelligence Laboratory, Zhengzhou University, Zhengzhou China And Technical Report, Nanyang Technological University, Singapore, 2019.
24. J Liang, C Yue, G Li, B Qu, PN Suganthan, K Yu, Problem Definitions and Evaluation Criteria for the CEC 2021 on Multimodal Multiobjective Path Planning Optimization, 2020
25. Abhishek Kumar, Guohua Wu, Mostafa Ali, Qizhang Luo, Rammohan Mallipeddi, Ponnuthurai Suganthan, Swagatam Das, "A Benchmark-Suite of Real-World Constrained Multi-Objective Optimization Problems and some Baseline Results,", 2020.
26. Ali Wagdy, Anas A Hadi, Ali K. Mohamed, Prachi Agrawal, Abhishek Kumar and P. N. Suganthan, Problem Definitions and Evaluation Criteria for the CEC 2021 Special Session and Competition on Single Objective Bound Constrained Numerical Optimization, Technical Report, Nanyang Technological University, Singapore

## **Working Papers / Pipeline**

### **Innovation**

Patents Filed, Patents Granted, Patents Licensed, Technology Disclosure Filed  
Technology Disclosure Licensed

### **Entrepreneurship**

## TEACHING SUMMARY

### Key Courses Taught (Current Year and Last 2 years)

Course Code	Course Title	Academic Year	Course Level	Type (Lecture, Tutorial, etc.)	Semester
IM/EE2006	Engg Math I	AY20 – AY21	UG	tutorial	1
EE6222	Machine Vision	AY20 – AY21	PG	lecture	1
EE7205	Res. Methods	AY20 – AY21	PG	lecture	2
EE6227	Genetic Algo & Mach. Learning	AY20 – AY21	PG	lecture	2
EE4208	Int. Sys. Design	AY20 – AY21	UG	practical	2
EE6222	Machine Vision	AY19 – AY20	PG	lecture	1
EE2001	Circuit Analysis	AY19 – AY20	UG	tutorial	1
EE7205	Res. Methods	AY19 – AY20	PG	lecture	2
EE6227	Genetic Algo & Mach. Learning	AY19 – AY20	PG	lecture	2
IM/EE2006	Engg Math I	AY19 – AY20	UG	tutorial	2
EE6222	Machine Vision	AY18 – AY19	PG	lecture	1
EE2001	Circuit Analysis	AY18 – AY19	UG	tutorial	1
EE7205	Res. Methods	AY18 – AY19	PG	lecture	2
EE8087	Living with Math	AY18 – AY19	UG	lecture	2

### Academic Supervision and Mentoring

Ph.D. (IGS-SE) ERIAN

#### PhD students

No.	PhD Student	Period	Role (Pls. indicate if Main/Sole or Co-supervisor)	Thesis/Project Title	Current Status
<b>Currently Supervising</b>					
1	CHENG Wen Xin	2018-present	Supervisor	Time Series Data Processing	-
2	SHI Qiushi	2019-present	Supervisor	Ensemble Deep Random Vector Functional Link Based Methods	
3.	HU Minghui	2020-present	Supervisor	Ensemble Learning for RVFL	
4	DAN MAINAK	2017-present	Co-Sup.	Time Series Forecasting	
<b>Graduated (Current Year and Last 2 years)</b>					
1	Dr Rakesh Kumar Katuwal	2019	Supervisor		Working for US-Based Start-up
2	Dr (Ms) Noor H. Awad	2019	Supervisor		Postodc, Germany

3	Dr Partha Pratim Biswas	2019	Supervisor	A*Star
4	Dr Qiu Xueheng	2018	Supervisor	Grab

#### Masters students (By Research Only)

No.	Masters Student	Period	Role	Thesis/Project Title	Current Status
<b>Currently Supervising</b>					
1	Shiva Sreenivasan	2021-present	Supervisor	Online and Incremental Ensemble RVFL	-
<b>Graduated (Current Year and Last 2 Years)</b>					
1					

#### Masters students (By Coursework) & Undergraduate Students

No. Graduated (Current Year and Last 2 Years)			No. Currently Supervising		
MSc#	FYP	URECA	MSc#	FYP	URECA
13	16	0	15	6	0

# MSc students (by coursework), include those taking either dissertation or Independent Study Module.

#### Post-doctoral fellows

No.	Post-doc Fellow	Appointment	Period	Thesis/Project Title	Current Status
<b>In employment (as at Current Year)</b>					
-					-
<b>Left service (Current Year and Last 2 Years)</b>					
-					

#### Teaching Awards / Recognition

Year	Teaching Award / Recognition
-	

#### Teaching Grants

Role	Year	Amount (\$\$)	Source of Grant
-			

## **SERVICE SUMMARY**

### **Service Awards / Recognition**

<b>Year</b>	<b>Role</b>
-	

### **School**

<b>Period of appointment</b>	<b>Role</b>
2012 - present	Program Lead MSc (CCA)

### **University**

<b>Period of appointment</b>	<b>Role</b>
-	

### **Academic Community**

<b>Period of appointment</b>	<b>Role</b>
2000 - present	Assoc. Editor Pattern Recognition (Elsevier)
2005 - present	Assoc. Editor IEEE Trans on Evol. computation
2013-2019	Associate Editor IEEE Trans on Cybernetics
2013-2019	Editorial Board Member Evolutionary Computation (MIT Press)
2009- present	Associate Editor, Information Sciences (Elsevier)
2010 - present	Co-EiC Swarm and Evolutionary Computation (Elsevier)
2018- present	Associate Editor, Applied Soft Computing
2018- present	Associate Editor, Neurocomputing
2020- present	Associate Editor, IEEE Trans on SMC: Systems
2021-present	Associate Editor, Information Fusion (Elsevier)

### **Other Service**

<b>Period of appointment</b>	<b>Role</b>
2021	IEEE CEC Conf, Technical Co-Chair
2021	IEEE CIS, USA. IEEE Trans TNNLS Outstanding Paper Award Com.
2021	IEEE CIS Chapter, Singapore, Vice Chair
2020	IJCNN / WCCI 2020, Tutorial Co-Chair
2019 – 2020	IEEE CIS Chapter, Singapore, Com Member
2014 - 2015	IEEE CIS Chapter Singapore Com. Member
2018	IEEE Singapore Section Secretary
2018-2021	IEEE CIS USA, CIS Distinguished Lecturer
2017	IEEE CIS USA. Chair, Outstanding PhD Dissertation Award Com
2017	IEEE CIS USA. Fellows Com Member of the CIS
2017	IEEE Singapore Section Com Member
2016	IEEE CIS, USA. IEEE CIM Outstanding Paper Award Com.

2015-2016	IEEE Singapore Section Secretary
2016	IEEE CIS Chapter, Singapore Com. Member
2015	IEEE CIS Outstanding PhD Award Com Member
2014-2016	IEEE CIS, USA Elected Administration Com. Member

## **APPENDIX 1**

*<Citation report should include list of most highly cited papers up to H-index or top **10** most highly cited papers, whichever is higher (in descending order).>*

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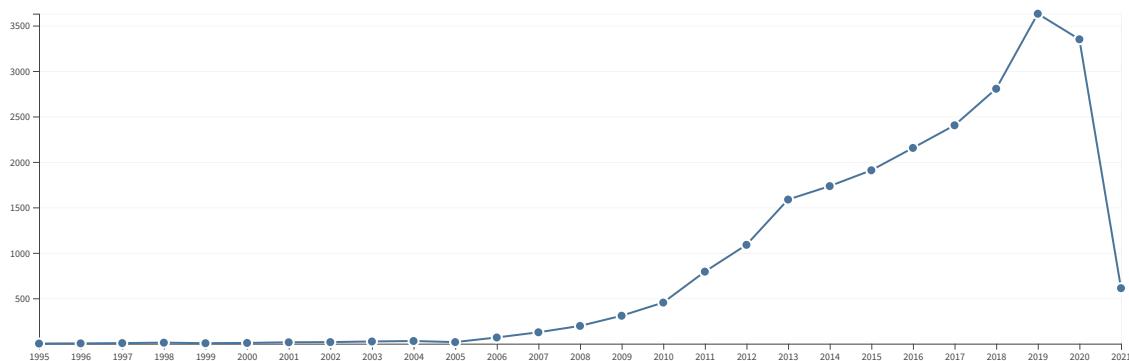
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How are these totals calculated?

2017	2018	2019	2020	2021	Total	Average Citations per Year
◀	▶	▶	▶	▶	2403 2805 3630 3349 611	23360 865.19

Use the checkboxes to remove individual items from this Citation Report

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1. **Differential Evolution: A Survey of the State-of-the-Art**

By: Das, Swagatam; Suganthan, Ponnuthurai Nagaratnam  
IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION Volume: 15 Issue: 1 Pages: 4-31 Published: FEB 2011

299 309 361 289 49 2554 232.18

2. **Comprehensive learning particle swarm optimizer for global optimization of multimodal functions**

By: Liang, J. J.; Qin, A. K.; Suganthan, Ponnuthurai Nagaratnam; et al.  
IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION Volume: 10 Issue: 3 Pages: 281-295 Published: JUN 2006

186 197 236 203 32 2002 125.13

3. **Differential Evolution Algorithm With Strategy Adaptation for Global Numerical Optimization**

By: Qin, A. K.; Huang, V. L.; Suganthan, P. N.  
IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION Volume: 13 Issue: 2 Pages: 398-417 Published: APR 2009

226 213 255 212 43 1969 151.46

4. **Multiobjective evolutionary algorithms: A survey of the state of the art**

By: Zhou, Aimin; Qu, Bo-Yang; Li, Hui; et al.  
SWARM AND EVOLUTIONARY COMPUTATION Volume: 1 Issue: 1 Pages: 32-49 Published: MAR 2011

132 144 184 134 27 1048 95.27

5. **Differential evolution algorithm with ensemble of parameters and mutation strategies**

116 89 92 83 16 785 71.36

<input type="checkbox"/> 6.	<b>Self-adaptive differential evolution algorithm for numerical optimization</b>	By: Qin, AK; Suganthan, PN Conference: IEEE Congress on Evolutionary Computation Location: Edinburgh, SCOTLAND Date: SEP 02-05, 2005 Sponsor(s): IEEE; IEEE Computat Intelligence Soc; IEE; Evolut Programming Soc 2005 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION, VOLS 1-3, PROCEEDINGS Book Series: IEEE Congress on Evolutionary Computation Pages: 1785-1791 Published: 2005	60	57	67	45	14	<b>698</b>	41.06
<input type="checkbox"/> 7.	<b>Recent advances in differential evolution - An updated survey</b>	By: Das, Swagatam; Mullick, Sankha Subhra; Suganthan, P. N. SWARM AND EVOLUTIONARY COMPUTATION Volume: 27 Pages: 1-30 Published: APR 2016	81	142	171	149	32	<b>598</b>	99.67
<input type="checkbox"/> 8.	<b>Evolutionary extreme learning machine</b>	By: Zhu, QY; Qin, AK; Suganthan, PN; et al. PATTERN RECOGNITION Volume: 38 Issue: 10 Pages: 1759-1763 Published: OCT 2005	50	58	46	58	8	<b>499</b>	29.35
<input type="checkbox"/> 9.	<b>A discrete artificial bee colony algorithm for the lot-streaming flow shop scheduling problem</b>	By: Pan, Quan-Ke; Tasgetiren, M. Fatih; Suganthan, P. N.; et al. INFORMATION SCIENCES Volume: 181 Issue: 12 Pages: 2455-2468 Published: JUN 15 2011	45	47	38	28	1	<b>379</b>	34.45
<input type="checkbox"/> 10.	<b>An Adaptive Differential Evolution Algorithm With Novel Mutation and Crossover Strategies for Global Numerical Optimization</b>	By: Islam, Sk. Minhazul; Das, Swagatam; Ghosh, Saurav; et al. IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS PART B-CYBERNETICS Volume: 42 Issue: 2 Special Issue: SI Pages: 482-500 Published: APR 2012	56	46	50	40	5	<b>365</b>	36.50

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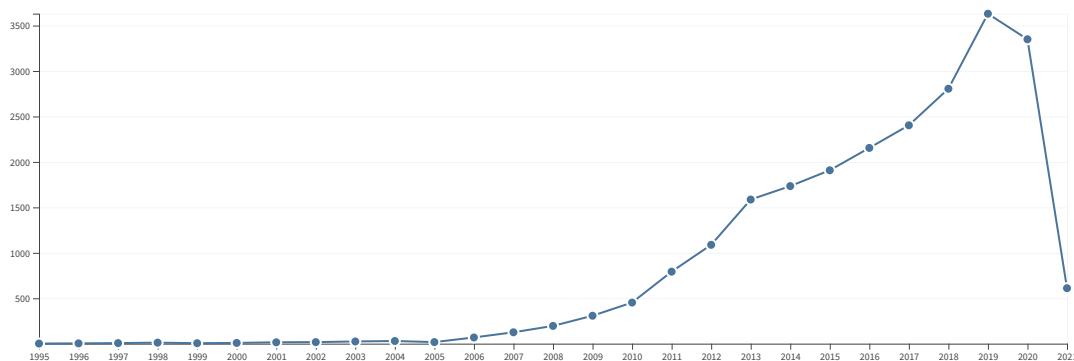
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11. [Dynamic multi-swarm particle swarm optimizer](#)

By: Liang, JJ; Suganthan, PN  
 Conference: IEEE Swarm Intelligence Symposium Location: Pasadena, CA Date: JUN 08-10, 2005  
 Sponsor(s): IEEE  
 2005 IEEE SWARM INTELLIGENCE SYMPOSIUM Pages: 124-129 Published: 2005

2403 2805 3630 3349 611 23360 865.19

28 25 21 22 5 316 18.59

12. [Novel composition test functions for numerical global optimization](#)

By: Liang, JJ; Suganthan, PN; Deb, K  
 Conference: IEEE Swarm Intelligence Symposium Location: Pasadena, CA Date: JUN 08-10, 2005  
 Sponsor(s): IEEE  
 2005 IEEE SWARM INTELLIGENCE SYMPOSIUM Pages: 68-75 Published: 2005

23 10 23 31 4 257 15.12

13. [Ensemble of Constraint Handling Techniques](#)

By: Mallipeddi, Rammohan; Suganthan, Ponnuthurai N.  
 IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION Volume: 14 Issue: 4 Pages: 561-579 Published: AUG 2010

23 21 32 29 5 242 20.17

14. [A self-adaptive global best harmony search algorithm for continuous optimization problems](#)

By: Pan, Quan-Ke; Suganthan, P. N.; Tasgetiren, M. Fatih; et al.  
 APPLIED MATHEMATICS AND COMPUTATION Volume: 216 Issue: 3 Pages: 830-848 Published: APR 1 2010

25 22 26 21 5 241 20.08

<input type="checkbox"/>	15. <a href="#">An analysis of diversity measures</a>	By: Tang, E. K.; Suganthan, P. N.; Yao, X. MACHINE LEARNING Volume: 65 Issue: 1 Pages: 247-271 Published: OCT 2006	15	27	19	18	3	<a href="#">216</a>	13.50
<input type="checkbox"/>	16. <a href="#">Ensemble Classification and Regression-Recent Developments, Applications and Future Directions</a>	By: Ren, Ye; Zhang, Le; Suganthan, P. N. IEEE COMPUTATIONAL INTELLIGENCE MAGAZINE Volume: 11 Issue: 1 Pages: 41-53 Published: FEB 2016	30	44	66	54	5	<a href="#">209</a>	34.83
<input type="checkbox"/>	17. <a href="#">Differential evolution with multi-population based ensemble of mutation strategies</a>	By: Wu, Guohua; Mallipeddi, Rammohan; Suganthan, P. N.; et al. INFORMATION SCIENCES Volume: 329 Special Issue: SI Pages: 329-345 Published: FEB 1 2016	28	44	52	52	17	<a href="#">203</a>	33.83
<input type="checkbox"/>	18. <a href="#">Differential Evolution with Neighborhood Mutation for Multimodal Optimization</a>	By: Qu, B. Y.; Suganthan, P. N.; Liang, J. J. IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION Volume: 16 Issue: 5 Pages: 601-614 Published: OCT 2012	17	27	37	30	7	<a href="#">187</a>	18.70
<input type="checkbox"/>	19. <a href="#">AFP-Pred: A random forest approach for predicting antifreeze proteins from sequence-derived properties</a>	By: Kandaswamy, Krishna Kumar; Chou, Kuo-Chen; Martinetz, Thomas; et al. JOURNAL OF THEORETICAL BIOLOGY Volume: 270 Issue: 1 Pages: 56-62 Published: FEB 7 2011	20	20	15	12	0	<a href="#">186</a>	16.91
<input type="checkbox"/>	20. <a href="#">Dynamic multi-swarm particle swarm optimizer with local search</a>	By: Liang, JJ; Suganthan, PN Conference: IEEE Congress on Evolutionary Computation Location: Edinburgh, SCOTLAND Date: SEP 02-05, 2005 Sponsor(s): IEEE; IEEE Comput Intelligence Soc; IEE; Evolut Programming Soc 2005 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION, VOLS 1-3, PROCEEDINGS Book Series: IEEE Congress on Evolutionary Computation Pages: 522-528 Published: 2005	17	16	21	17	1	<a href="#">184</a>	10.82

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<input type="checkbox"/>	<b>21. A Distance-Based Locally Informed Particle Swarm Model for Multimodal Optimization</b>	By: Qu, B. Y.; Suganthan, Ponnuthurai Nagaratnam; Das, Swagatam	24	20	26	32	5	179
	<b>IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION</b> Volume: 17 Issue: 3	Pages: 387-402 Published: JUN 2013						19.89
<input type="checkbox"/>	<b>22. Heterogeneous comprehensive learning particle swarm optimization with enhanced exploration and exploitation</b>	By: Lynn, Nandar; Suganthan, Ponnuthurai Nagaratnam	17	33	53	52	11	172
	<b>SWARM AND EVOLUTIONARY COMPUTATION</b> Volume: 24 Pages: 11-24 Published: OCT 2015							24.57
<input type="checkbox"/>	<b>23. A novel hybrid discrete differential evolution algorithm for blocking flow shop scheduling problems</b>	By: Wang, Ling; Pan, Quan-Ke; Suganthan, P. N.; et al.	15	18	16	13	5	169
	<b>COMPUTERS &amp; OPERATIONS RESEARCH</b> Volume: 37 Issue: 3 Special Issue: SI	Pages: 509-520 Published: MAR 2010						14.08
<input type="checkbox"/>	<b>24. A discrete artificial bee colony algorithm for the total flowtime minimization in permutation flow shops</b>	By: Tasgetiren, M. Fatih; Pan, Quan-Ke; Suganthan, P. N.; et al.	26	14	15	8	1	165
	<b>INFORMATION SCIENCES</b> Volume: 181 Issue: 16 Pages: 3459-3475 Published: AUG 15 2011							15.00
<input type="checkbox"/>	<b>25. Real-parameter evolutionary multimodal optimization - A survey of the state-of-the-art</b>	By: Das, Swagatam; Maity, Sayan; Qu, Bo-Yang; et al.	19	18	20	8	3	163
	<b>SWARM AND EVOLUTIONARY COMPUTATION</b> Volume: 1 Issue: 2 Pages: 71-88 Published: JUN 2011							14.82
<input type="checkbox"/>	<b>26. A survey of randomized algorithms for training neural networks</b>	By: Zhang, Le; Suganthan, P. N.	25	45	34	38	1	153
	<b>INFORMATION SCIENCES</b> Volume: 364 Pages: 146-155 Published: OCT 10 2016							25.50
<input type="checkbox"/>	<b>27. Decomposition-Based Multiobjective Evolutionary Algorithm with an Ensemble of Neighborhood Sizes</b>	By: Zhao, Shi-Zheng; Suganthan, Ponnuthurai Nagaratnam; Zhang, Qingfu	28	18	23	12	3	149
	<b>IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION</b> Volume: 16 Issue: 3 Pages: 442-446 Published: JUN 2012							14.90
<input type="checkbox"/>	<b>28. Empirical Mode Decomposition based ensemble deep learning for load demand time series forecasting</b>	By: Qiu, Xueheng; Ren, Ye; Suganthan, Ponnuthurai Nagaratnam; et al.	5	33	42	56	8	144
	<b>APPLIED SOFT COMPUTING</b> Volume: 54 Pages: 246-255 Published: MAY 2017							28.80
<input type="checkbox"/>	<b>29. Ensemble methods for wind and solar power forecasting-A state-of-the-art review</b>	By: Ren, Ye; Suganthan, P. N.; Srikanth, N.	14	38	31	39	4	141
	<b>RENEWABLE &amp; SUSTAINABLE ENERGY REVIEWS</b> Volume: 50 Pages: 82-91 Published: OCT 2015							20.14
<input type="checkbox"/>	<b>30. Self-adaptive differential evolution algorithm for constrained real-parameter optimization</b>	9	16	10	8	1	137	8.56

By: [Huang, V. L.](#); [Qin, A. K.](#); [Suganthan, P. N.](#)  
Conference: IEEE Congress on Evolutionary Computation Location: Vancouver,  
CANADA Date: JUL 16-21, 2006  
Sponsor(s): IEEE  
2006 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION, VOLS 1-6 Book Series:  
IEEE Congress on Evolutionary Computation Pages: 17 -+ Published: 2006

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<input type="checkbox"/>	<b>31. A comprehensive evaluation of random vector functional link networks</b>	22	32	36	36	3	<b>136</b>	22.67
	By: Zhang, Le; Suganthan, P. N. INFORMATION SCIENCES Volume: 367 Pages: 1094-1105 Published: NOV 1 2016							
<input type="checkbox"/>	<b>32. Economic dispatch using hybrid grey wolf optimizer</b>	19	27	47	33	8	<b>136</b>	22.67
	By: Jayabarathi, T.; Raghunathan, T.; Adarsh, B. R.; et al. ENERGY Volume: 111 Pages: 630-641 Published: SEP 15 2016							
<input type="checkbox"/>	<b>33. Dynamic Multi-Swarm Particle Swarm Optimizer with Local Search for Large Scale Global Optimization</b>	14	16	10	7	10	<b>134</b>	9.57
	By: Zhao, S. Z.; Liang, J. J.; Suganthan, P. N.; et al. Conference: IEEE Congress on Evolutionary Computation Location: Hong Kong, PEOPLES R CHINA Date: JUN 01-06, 2008 Sponsor(s): IEEE 2008 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION, VOLS 1-8 Book Series: IEEE Congress on Evolutionary Computation Pages: 3845 -+ Published: 2008							
<input type="checkbox"/>	<b>34. A Comparative Study of Empirical Mode Decomposition-Based Short-Term Wind Speed Forecasting Methods</b>	21	23	29	32	4	<b>133</b>	19.00
	By: Ren, Ye; Suganthan, P. N.; Srikanth, Narasimlu IEEE TRANSACTIONS ON SUSTAINABLE ENERGY Volume: 6 Issue: 1 Pages: 236-244 Published: JAN 2015							
<input type="checkbox"/>	<b>35. Ensemble of differential evolution variants</b>	0	17	47	48	15	<b>127</b>	31.75
	By: Wu, Guohua; Shen, Xin; Li, Haifeng; et al. INFORMATION SCIENCES Volume: 423 Pages: 172-186 Published: JAN 2018							
<input type="checkbox"/>	<b>36. A dynamic neighborhood learning based particle swarm optimizer for global numerical optimization</b>	16	9	21	22	2	<b>125</b>	12.50
	By: Nasir, Md; Das, Swagatam; Maity, Dipankar; et al. INFORMATION SCIENCES Volume: 209 Pages: 16-36 Published: NOV 20 2012							
<input type="checkbox"/>	<b>37. A hybrid tabu search algorithm with an efficient neighborhood structure for the flexible job shop scheduling problem</b>	6	12	15	7	1	<b>112</b>	10.18
	By: Li, Jun-Qing; Pan, Quan-Ke; Suganthan, P. N.; et al. INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY Volume: 52 Issue: 5-8 Pages: 683-697 Published: FEB 2011							
<input type="checkbox"/>	<b>38. A differential evolution algorithm with self-adapting strategy and control parameters</b>	16	6	12	6	0	<b>110</b>	10.00
	By: Pan, Quan-Ke; Suganthan, P. N.; Wang, Ling; et al. Conference: 11th International Workshop on Project Management and Scheduling Location: Bogazici Univ, Istanbul, TURKEY Date: AUG 28-30, 2008 Sponsor(s): Duzce Univ COMPUTERS & OPERATIONS RESEARCH Volume: 38 Issue: 1 Special Issue: SI Pages: 394-408 Published: JAN 2011							
<input type="checkbox"/>	<b>39. Random vector functional link network for short-term electricity load demand forecasting</b>	19	35	21	26	3	<b>107</b>	17.83
	By: Ren, Ye; Suganthan, P. N.; Srikanth, N.; et al. INFORMATION SCIENCES Volume: 367 Pages: 1078-1093 Published: NOV 1 2016							
<input type="checkbox"/>	<b>40.</b>	11	20	10	7	0	<b>104</b>	9.45

**Self-adaptive differential evolution with multi-trajectory search for  
large-scale optimization**

By: Zhao, Shi-Zheng; Suganthan, Ponnuthurai Nagaratnam; Das, Swagatam  
**SOFT COMPUTING** Volume: 15 Issue: 11 Special Issue: SI Pages: 2175-2185  
Published: NOV 2011

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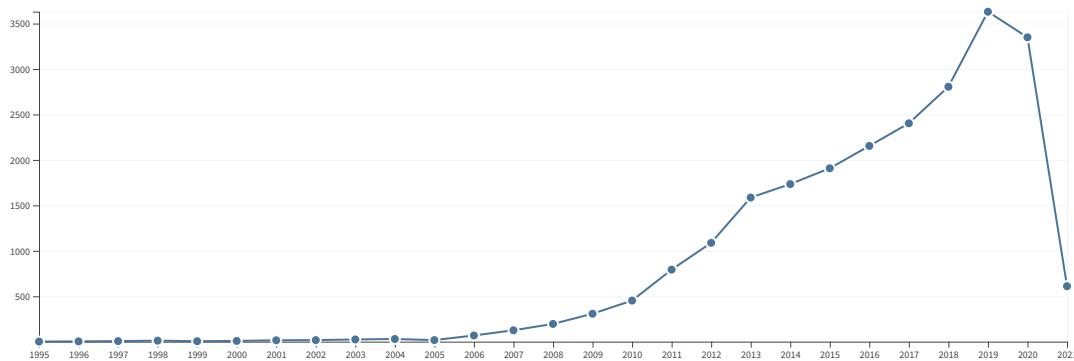
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41. [Niching particle swarm optimization with local search for multi-modal optimization](#)

By: Qu, B. Y.; Liang, J. J.; Suganthan, P. N.  
INFORMATION SCIENCES Volume: 197 Pages: 131-143 Published: AUG 15 2012

2403 2805 3630 3349 611 23360 865.19

9 14 11 13 6 100 10.00

42. [Design of Non-Uniform Circular Antenna Arrays Using a Modified Invasive Weed Optimization Algorithm](#)

By: Roy, Gourab Ghosh; Das, Swagatam; Chakraborty, Prithwish; et al.  
IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION Volume: 59 Issue: 1 Pages: 110-118 Published: JAN 2011

14 7 9 8 1 99 9.00

43. [Pareto-based grouping discrete harmony search algorithm for multi-objective flexible job shop scheduling](#)

By: Gao, K. Z.; Suganthan, P. N.; Pan, Q. K.; et al.  
INFORMATION SCIENCES Volume: 289 Pages: 76-90 Published: DEC 24 2014

9 17 29 16 1 98 12.25

44. [Ensemble of niching algorithms](#)

By: Yu, E. L.; Suganthan, P. N.  
INFORMATION SCIENCES Volume: 180 Issue: 15 Pages: 2815-2833 Published: AUG 1 2010

11 6 10 5 1 98 8.17

45. [Discrete harmony search algorithm for flexible job shop scheduling problem with multiple objectives](#)

14 18 30 20 3 97 16.17

46. **Bio-inspired computation: Where we stand and what's next**  
By: Del Ser, Javier; Osaba, Eneko; Molina, Daniel; et al.  
SWARM AND EVOLUTIONARY COMPUTATION Volume: 48 Pages: 220-250 Published: AUG 2019
47. **Dynamic multi-swarm particle swarm optimizer with a novel constraint-handling mechanism**  
By: Liang, J. J.; Suganthan, P. N.  
Conference: IEEE Congress on Evolutionary Computation Location: Vancouver, CANADA Date: JUL 16-21, 2006  
Sponsor(s): IEEE  
2006 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION, VOLS 1-6 Book Series: IEEE Congress on Evolutionary Computation Pages: 9 -+  
Published: 2006
48. **Comprehensive learning particle swarm optimizer for solving multiobjective optimization problems**  
By: Huang, VL; Suganthan, PN; Liang, JJ  
INTERNATIONAL JOURNAL OF INTELLIGENT SYSTEMS Volume: 21 Issue: 2 Pages: 209-226 Published: FEB 2006
49. **Multi-objective evolutionary algorithms based on the summation of normalized objectives and diversified selection**  
By: Qu, B. Y.; Suganthan, P. N.  
INFORMATION SCIENCES Volume: 180 Issue: 17 Pages: 3170-3181 Published: SEP 1 2010
50. **An ensemble of discrete differential evolution algorithms for solving the generalized traveling salesman problem**  
By: Tasgetiren, M. Fatih; Suganthan, P. N.; Pan, Quan-Ke  
APPLIED MATHEMATICS AND COMPUTATION Volume: 215 Issue: 9 Pages: 3356-3368 Published: JAN 1 2010

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**22,442**

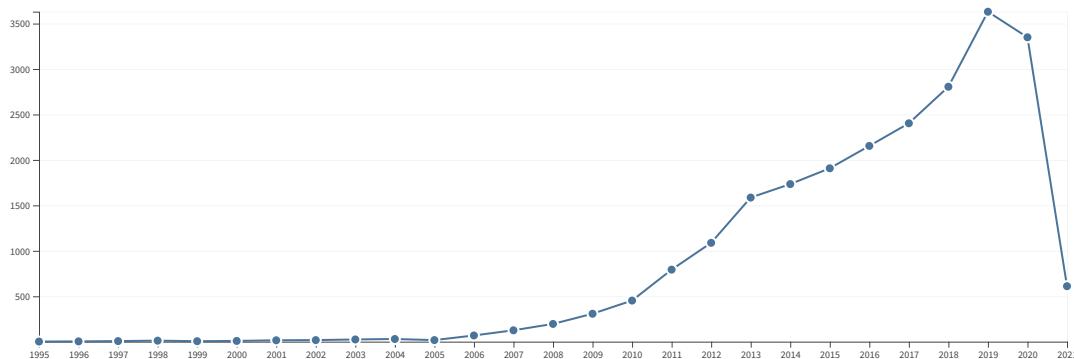
Citing articles

**14,881** [Analyze](#)

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**14,619** [Analyze](#)

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◀	▶	▶	▶	▶	2403 2805 3630 3349 611	23360 865.19

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 or restrict to items published between 1900 and 2021 

51. **Optimal power flow solutions incorporating stochastic wind and solar power**

By: Biswas, Partha P.; Suganthan, P. N.; Amarasinga, Gehan A. J.  
ENERGY CONVERSION AND MANAGEMENT Volume: 148 Pages: 1194-1207 Published: SEP 15 2017

2403 2805 3630 3349 611 23360 865.19

0 12 28 38 7 85 17.00

52. **Dynamic multi-swarm particle swarm optimizer with harmony search**

By: Zhao, S. -Z.; Suganthan, P. N.; Pan, Quan-Ke; et al.  
EXPERT SYSTEMS WITH APPLICATIONS Volume: 38 Issue: 4 Pages: 3735-3742 Published: APR 2011

12 8 9 10 3 85 7.73

53. **Prediction of Apoptosis Protein Locations with Genetic Algorithms and Support Vector Machines Through a New Mode of Pseudo Amino Acid Composition**

By: Kandaswamy, Krishna Kumar; Pugalenthhi, Ganesan; Moeller, Steffen; et al.  
PROTEIN AND PEPTIDE LETTERS Volume: 17 Issue: 12 Pages: 1473-1479 Published: DEC 2010

1 2 2 5 0 83 6.92

54. **Two-lbests based multi-objective particle swarm optimizer**

By: Zhao, S. -Z.; Suganthan, P. N.  
ENGINEERING OPTIMIZATION Volume: 43 Issue: 1 Pages: 1-17 Article Number: PII 925207963 Published: 2011

6 4 4 4 0 82 7.45

4 5 6 2 1 82 6.83

55. **Ensemble strategies with adaptive evolutionary programming**  
By: Mallipeddi, R.; Mallipeddi, S.; Suganthan, P. N.  
INFORMATION SCIENCES Volume: 180 Issue: 9 Pages: 1571-1581 Published: MAY 1 2010
56. **Ensemble particle swarm optimizer**  
By: Lynn, Nandar; Suganthan, Ponnuthurai Nagaratnam  
APPLIED SOFT COMPUTING Volume: 55 Pages: 533-548 Published: JUN 2017  
0 12 27 34 7 80 16.00
57. **Multi-objective Optimization Using Self-adaptive Differential Evolution Algorithm**  
By: Huang, V. L.; Zhao, S. Z.; Mallipeddi, R.; et al.  
Conference: IEEE Congress on Evolutionary Computation Location: Trondheim, NORWAY Date: MAY 18-21, 2009  
Sponsor(s): IEEE  
2009 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION, VOLS 1-5 Book Series: IEEE Congress on Evolutionary Computation Pages: 190-194  
Published: 2009  
10 3 8 7 2 80 6.15
58. **A multi-populated differential evolution algorithm for solving constrained optimization problem**  
By: Tasgetiren, M. Fatih; Suganthan, P. N.  
Conference: IEEE Congress on Evolutionary Computation Location: Vancouver, CANADA Date: JUL 16-21, 2006  
Sponsor(s): IEEE  
2006 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION, VOLS 1-6 Book Series: IEEE Congress on Evolutionary Computation Pages: 33 -+  
Published: 2006  
2 5 7 3 1 79 4.94
59. **Multi-population differential evolution with balanced ensemble of mutation strategies for large-scale global optimization**  
By: Ali, Mostafa Z.; Awad, Noor H.; Suganthan, Ponnuthurai N.  
APPLIED SOFT COMPUTING Volume: 33 Pages: 304-327 Published: AUG 2015  
10 16 18 16 8 77 11.00
60. **DNA-Prot: Identification of DNA Binding Proteins from Protein Sequence Information using Random Forest**  
By: Kumar, K. Krishna; Pugalenthi, Ganesan; Suganthan, P. N.  
JOURNAL OF BIOMOLECULAR STRUCTURE & DYNAMICS Volume: 26 Issue: 6 Pages: 679-686 Published: JUN 2009  
7 9 10 8 3 77 5.92

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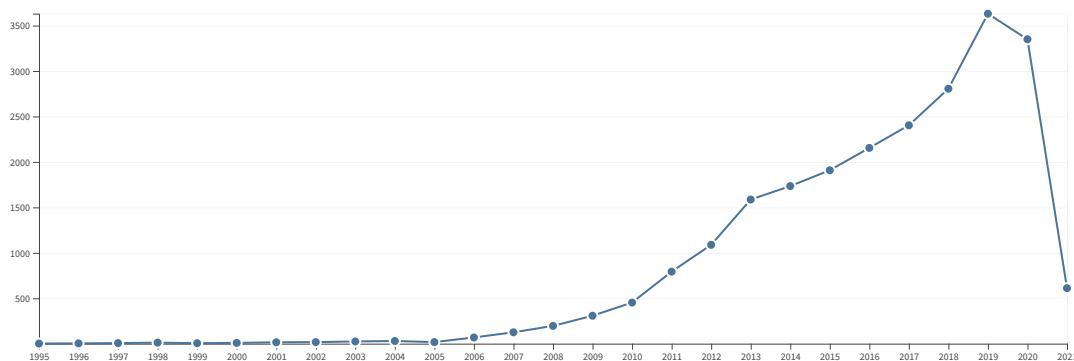
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2403	2805	3630	3349	611	23360	865.19

Use the checkboxes to remove individual items from this Citation Report

 or restrict to items published between 1900 and 2021

61. [Feature selection for microarray data using least squares SVM and particle swarm optimization](#)

By: Tang, EK; Suganthan, PN; Yao, X

Conference: 2nd IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology Location: La Jolla, CA Date: NOV 14-15, 2005

Sponsor(s): IEEE Comput Intelligence Soc

Proceedings of the 2005 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology Pages: 9-16 Published: 2005

2403 2805 3630 3349 611 23360 865.19

12 3 6 2 0 77 4.53

62. [A survey on multi-objective evolutionary algorithms for the solution of the environmental/economic dispatch problems](#)

By: Qu, B. Y.; Zhu, Y. S.; Jiao, Y. C.; et al.

SWARM AND EVOLUTIONARY COMPUTATION Volume: 38 Pages: 1-11 Published: FEB 2018

0 12 35 25 3 75 18.75

63. [A two-stage artificial bee colony algorithm scheduling flexible job-shop scheduling problem with new job insertion](#)

By: Gao, Kai Zhou; Suganthan, Ponnuthurai Nagaratnam; Chua, Tay Jin; et al.

EXPERT SYSTEMS WITH APPLICATIONS Volume: 42 Issue: 21 Pages: 7652-7663 Published: NOV 30 2015

10 13 21 20 2 75 10.71

64. [Constrained multi-objective optimization algorithm with an ensemble of constraint handling methods](#)

By: Qu, B. Y.; Suganthan, P. N.

ENGINEERING OPTIMIZATION Volume: 43 Issue: 4 Pages: 403-416 Article Number: PII 929448277 Published: 2011

7 5 17 6 0 73 6.64

<input type="checkbox"/>	<a href="#">65. An Ensemble Sinusoidal Parameter Adaptation incorporated with L-SHADE for Solving CEC2014 Benchmark Problems</a>	By: Awad, Noor H.; Ali, Mostafa Z.; Suganthan, Ponnuthurai N.; et al. Conference: IEEE Congress on Evolutionary Computation (CEC) held as part of IEEE World Congress on Computational Intelligence (IEEE WCCI) Location: Vancouver, CANADA Date: JUL 24-29, 2016 Sponsor(s): IEEE; IEEE Computat Intelligence Soc; Int Neural Network Soc; Evolutionary Programming Soc; IET; IEEE BigData Initiat; Gulf Univ Sci & Technol 2016 IEEE CONGRESS ON EVOLUTIONARY COMPUTATION (CEC) Book Series: IEEE Congress on Evolutionary Computation Pages: 2958-2965 Published: 2016	11	13	25	18	2	<b>70</b>	11.67
<input type="checkbox"/>	<a href="#">66. A local-best harmony search algorithm with dynamic sub-harmony memories for lot-streaming flow shop scheduling problem</a>	By: Pan, Quan-Ke; Suganthan, P. N.; Liang, J. J.; et al. <i>EXPERT SYSTEMS WITH APPLICATIONS</i> Volume: 38 Issue: 4 Pages: 3252-3259 Published: APR 2011	9	8	8	1	0	<b>70</b>	6.36
<input type="checkbox"/>	<a href="#">67. An improved artificial bee colony algorithm for flexible job-shop scheduling problem with fuzzy processing time</a>	By: Gao, Kai Zhou; Suganthan, Ponnuthurai Nagaratnam; Pan, Quan Ke; et al. <i>EXPERT SYSTEMS WITH APPLICATIONS</i> Volume: 65 Pages: 52-67 Published: DEC 15 2016	5	16	30	18	0	<b>69</b>	11.50
<input type="checkbox"/>	<a href="#">68. An approach for classification of highly imbalanced data using weighting and undersampling</a>	By: Anand, Ashish; Pugalenth, Ganesan; Fogel, Gary B.; et al. <i>AMINO ACIDS</i> Volume: 39 Issue: 5 Pages: 1385-1391 Published: NOV 2010	6	5	10	10	5	<b>69</b>	5.75
<input type="checkbox"/>	<a href="#">69. Gene selection algorithms for microarray data based on least squares support vector machine</a>	By: Tang, EK; Suganthan, PN; Yao, X <i>BMC BIOINFORMATICS</i> Volume: 7 Article Number: 95 Published: FEB 27 2006	6	4	0	2	0	<b>69</b>	4.31
<input type="checkbox"/>	<a href="#">70. Analyzing convergence performance of evolutionary algorithms: A statistical approach</a>	By: Derrac, Joaquin; Garcia, Salvador; Hui, Sheldon; et al. <i>INFORMATION SCIENCES</i> Volume: 289 Pages: 41-58 Published: DEC 24 2014	11	12	14	13	3	<b>68</b>	8.50

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## **APPENDIX 2**

*<NTU student feedback on teaching – the 5 years index chart should be included, and not the 3 years chart. Student feedback are to be arranged according to the listing in the index chart.>*

Student Feedback on Teaching for Academic Year 2020/2021 Semester 1

Date: 12-MAR-2021 04:32 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2006 (ENGINEERING MATHEMATICS I)

Method: TUT, Group: EE08

Actual Class Size: 35

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	8	4.25	.83	4	2	2	0	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	8	4.38	.86	5	1	2	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	8	4.25	.83	4	2	2	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	8	4.25	.83	4	2	2	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	8	4.38	.86	5	1	2	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	8	4.13	.78	3	3	2	0	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	8	4.25	.83	4	2	2	0	0
8	<b>Assessment - The faculty member teaching this course :</b> Set assessment tasks that enabled me to demonstrate my achievement of the intended learning outcomes	8	4.25	.83	4	2	2	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	8	4.38	.86	5	1	2	0	0
10	<b>Engaged teaching</b> Increased my interest in the course	8	4.25	.83	4	2	2	0	0

(Individual)

Mean Teaching Score: 4.28

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

**Please comment on this faculty member's strengths**

1. Gave more details than what is included in the lecture videos. Taught how to find shortcuts and save time.

**Please comment on how the faculty member might improve the teaching and learning in this course.**

1. Just that please be a bit more patient in consultation discussions.

**Faculty Comments (max 500 chars)**

Characters typed: 0

Student Feedback on Teaching for Academic Year 2020/2021 Semester 1

Date: 12-MAR-2021 04:32 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: IM2006 (ENGINEERING MATHEMATICS I)

Method: TUT, Group: IT01

Actual Class Size: 33

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	10	4.1	.94	4	4	1	1	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	10	4.4	.66	5	4	1	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	10	4.3	.78	5	3	2	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	10	4.4	.66	5	4	1	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	10	4.2	.98	5	3	1	1	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	10	4.1	.7	3	5	2	0	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	10	4	.77	3	4	3	0	0
8	<b>Assessment - The faculty member teaching this course :</b> Set assessment tasks that enabled me to demonstrate my achievement of the intended learning outcomes	10	4.2	.75	4	4	2	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	10	3.9	1.14	3	5	1	0	1
10	<b>Engaged teaching</b> Increased my interest in the course	10	3.9	1.14	3	5	1	0	1

(Individual)

Mean Teaching Score: 4.15

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

**Please comment on this faculty member's strengths**

**Please comment on how the faculty member might improve the teaching and learning in this course.**

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2020/2021 Semester 1

Date: 12-MAR-2021 04:33 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: IM2006 (ENGINEERING MATHEMATICS I)

Method: TUT, Group: IT02

Actual Class Size: 31

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	10	4	.89	3	5	1	1	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	10	4	.89	3	5	1	1	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	10	4.1	.7	3	5	2	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	10	4.1	.7	3	5	2	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	10	4.1	.7	3	5	2	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	10	4.1	.7	3	5	2	0	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	10	4.1	.7	3	5	2	0	0
8	<b>Assessment - The faculty member teaching this course :</b> Set assessment tasks that enabled me to demonstrate my achievement of the intended learning outcomes	10	4.1	.7	3	5	2	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	10	4.1	.7	3	5	2	0	0
10	<b>Engaged teaching</b> Increased my interest in the course	10	4.1	.7	3	5	2	0	0

(Individual)

Mean Teaching Score: 4.08

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

Please comment on this faculty member's strengths

Please comment on how the faculty member might improve the teaching and learning in this course.

Faculty Comments (max 500 chars)

Characters typed:

Student Feedback on Teaching for Academic Year 2020/2021 Semester 1

Date: 12-MAR-2021 04:33 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE6222 (MACHINE VISION)

Method: LEC, Group: A

Actual Class Size: 129

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	63	4.51	.71	37	23	2	0	1
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	63	4.62	.63	43	17	2	1	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	63	4.65	.65	46	13	3	1	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	63	4.65	.57	44	16	3	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	63	4.52	.77	41	16	5	0	1
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	63	4.59	.63	42	16	5	0	0
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	63	4.46	.89	40	16	5	0	2
8	<b>Assessment - The faculty member teaching this course :</b> Set assessment tasks that enabled me to demonstrate my achievement of the intended learning outcomes	63	4.63	.6	44	15	4	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	63	4.52	.81	42	15	4	1	1
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	63	4.52	.79	42	14	6	0	1

(Individual)

Mean Teaching Score: 4.57

Please give reasons for your score? (for question 1)

- 1. The statement is clear and the citations are appropriate
- 2. I really liked the slides.
- 3. He asks questions during the lecture to prompt our thinking

Please give reasons for your score? (for question 2)

- 1. needs to adapt to accent
- 2. He will provide additional examples through drawings, and it's helpful that he uploaded all his handwritten notes to blackboard
- 3. Neat notes. Good English.

Please give reasons for your score? (for question 3)

- 1. Support email Q&A
- 2. When we asked him questions, he seems a bit reluctant to answer our questions and he did not try to answer our questions. He just asked us to refer back to our notes, which subsequently makes him unapproachable.
- 3. Cleared doubts in class and after class. Was open to mailing for doubts also

Please give reasons for your score? (for question 4)

- 1. Properly cite examples, key and incomprehensible content will be emphasized and repeated
- 2. Sometimes he will go in-depth to a topic, but most often than not he did not try to link it back to the bigger picture. e.g. What was the objective of this technique and how does it link to the larger picture.
- 3. Would explain with handwritten examples for certain tough topics

**Please give reasons for your score? (for question 5)**

- |  |
|--|
| 1. Guide students to think divergently                         |
| 2. He asks questions during the lecture to prompt our thinking |
| 3. Posed why/how questions related to certain topics           |

**Please give reasons for your score? (for question 6)**

- |  |
|--|
| 1. Able to respond to email questions in time  |
| 2. He did not go through the tutorial answers with us, but he did upload the tutorial answers. |
| 3. The feedback for my doubts was very insightful  |

**Please give reasons for your score? (for question 7)**

- |  |
|--|
| 1. Teach in a way that is easy to understand   |
| 2. I hope that he can provide more real world example or his experience working with some of the techniques to help us gain a better understanding of certain techniques |
| 3. gave context for some topics from real world  |

**Please give reasons for your score? (for question 8)**

- |  |
|--|
| 1. Assign homework based on class content  |
| 2. The tutorial questions he provided was useful to help us consolidate what we learned. Hope that he can provide more examples and tutorials as students usually learn more by doing. |
| 3. Tutorial was very helpful for practice  |

**Please give reasons for your score? (for question 9)**

- |  |
|--|
| 1. There is much content in the course, so no extra time for expansion                           |
| 2. He did go through past homework and exam problems and asked us how we can solve this problem. |
| 3. Asked good questions. Assignments/Tuts were engaging  |

**Please give reasons for your score? (for question 10)**

- |  |
|--|
| 1. Be able to explain abstract concepts in a mathematical way  |
| 2. He should always try to link the techniques back to a bigger picture. Or show more examples/videos to help us visualise better. |
| 3. Flow of topics was concise. The book sometimes was convoluted/repetitive as compared to Profs slides                            |

**Please comment on this faculty member's strengths**

- |  |
|--|
| 1. Great   |
| 2. In general, he provides more explanation beyond what was in the notes, and drawing on a piece of paper and showing it on a visualiser helps us to better visualise the concepts better. His notes are detailed, and he always gives extra explanation when teaching.                    |
| 3. .   |
| 4. He will upload the handwritten notes in the NTU learn, which is very helpful.   |
| 5. The handwritten explanation and illustration is really good; allow me to understand the concept better than just text in the note.  |
| 6. Very knowledgeable and to the point. Explained topics very concisely and showed examples for a lot of topics to clear them up. The assignments and Tutorials were well designed so as to give us good practice. I especially enjoyed topics 7, 8, 9. They were taught very very well :) |
| 7. Helped students understand the course well  |
| 8. Everytime I ask questions by emails, the prof will reply and answer my questions in detail.   |
| 9. Good  |
| 10. good   |
| 11. He can good explain the principles and algorithms  |
| 12. Overall, this faculty is very helpful and his class is easy to understand  |
| 13. The content of the course is compact and the learning intensity is strong  |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |  |
|--|
| 1. Have more example-based learning  |
| 2. He should always link the concepts he taught to the bigger picture. It's easy to lose track of the bigger objective when he goes into too much detail into a technique without linking it back to the bigger picture. The objective of the technique should always be stated along the way. For instance, what is the purpose of hough transformation? How is it better than other techniques like canny edge detection etc? The comparison with other techniques will be useful to help us better understand why certain techniques are preferred over others, and what are the advantages and disadvantages of certain techniques. It will be good to also explain how certain kernels are derived, or let us do some programming exercises on edge detection, kernel convolution etc. He also assumes that all of us knows Fourier transformation when in fact some of us are of different background, and thus, an introduction of Fourier analysis, discrete Fourier transformation is needed. Please try to answer our questions when we approach you, because some students may not immediately get the concept and we would like to seek your help and learn. |
| 3. .   |
| 4. Give more care to students especially those who doesn't have much foundation knowledge of this subject. Also, it is suggested that if the quiz starts at 7:30 pm, you don't need to tell students to arrive at the venue almost 1 hour in advance. Maybe 15 mins is enough.   |
| 5. There were very few numerical questions in the course but even so it would have been nice to have had practiced them more in class.   |
| 6. upload more reading material for students to better understand the course.  |
| 7. have no suggestions.  |
| 8. Maybe he can involve more interaction between classmates  |
| 9. Using some dynamic interaction techniques, such as dynamic models to explain the application of a technology, makes the content easier to understand  |

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2019/2020 Semester 2

Date: 12-MAR-2021 04:30 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2006 (ENGINEERING MATHEMATICS I)

Method: TUT, Group: SC09

Actual Class Size: 41

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	21	3.52	.79	2	9	8	2	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	21	3.57	.73	2	9	9	1	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	21	3.81	.85	4	11	4	2	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	21	3.62	.72	2	10	8	1	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	21	3.52	.85	2	10	6	3	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	21	3.43	.79	2	7	10	2	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	21	3.33	.84	2	6	10	3	0
8	<b>Assessment - The faculty member teaching this course :</b> Weighted the assessment tasks relative to the amount of work required to complete the task	21	3.43	.79	2	7	10	2	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	21	3.48	.85	2	9	7	3	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	21	3.57	.79	2	10	7	2	0

(Individual)

Mean Teaching Score: 3.53

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

**Please comment on this faculty member's strengths**

- 1. He has good knowledge of the module.
- 2. Very patient
- 3. ..
- 4. he explains clearly
- 5. He takes his time to explain to student's clearly the key concepts of the subject.

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- 1. He can speak up more and make the classes more fun, instead of just sitting down and monotonously speaking.
- 2. Work on his delivery during tutorial class - A bit monotone during teaching
- 3. Can be more engaging
- 4. ..
- 5. Too monotonous
- 6. would be more helpful for us if he just goes through the tutorial question right away and along the way clear our doubt as most of us has already done the tutorial before tutorial classes. we wouldn't need more time to do tutorials in class.
- 7. No comments

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2019/2020 Semester 2

Date: 12-MAR-2021 04:31 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: IM2006 (ENGINEERING MATHEMATICS I)

Method: TUT, Group: IT01

Actual Class Size: 36

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	26	3.5	1.01	5	7	11	2	1
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	26	3.54	.93	5	6	14	0	1
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	26	3.69	.91	5	10	10	0	1
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	26	3.46	1.01	5	6	12	2	1
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	26	3.69	.87	6	7	12	1	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	26	3.54	1.01	5	8	10	2	1
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	26	3.58	1.04	6	7	10	2	1
8	<b>Assessment - The faculty member teaching this course :</b> Weighted the assessment tasks relative to the amount of work required to complete the task	26	3.58	.97	5	8	11	1	1
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	26	3.58	1.04	6	7	10	2	1
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	26	3.46	1.01	5	6	12	2	1

(Individual)

Mean Teaching Score: 3.56

Please give reasons for your score? (for question 1)

- 1. There is no engagement during the tutorial session
- 2. only had 2 lesson with him. couldn't give a proper score.

Please give reasons for your score? (for question 2)

- 1. I dont really understand what he was saying .
- 2. only had 2 lesson with him. couldn't give a proper score.

Please give reasons for your score? (for question 3)

- 1. He is approachable but he can't answer my question.
- 2. only had 2 lesson with him. couldn't give a proper score.

Please give reasons for your score? (for question 4)

- 1. He did not explain any important concepts during his tutorial class. I asked him to go through some summary for the chapter but he don't seems like he wanted to do .
- 2. only had 2 lesson with him. couldn't give a proper score.

Please give reasons for your score? (for question 5)

- 1. Yeah, because he can't really explain the answer well therefore it enrouages us to use crtical thinking
- 2. only had 2 lesson with him. couldn't give a proper score.

**Please give reasons for your score? (for question 6)**

- |    |   |
|----|---|
| 1. | NOT AT ALL  |
| 2. | only had 2 lesson with him. couldn't give a proper score. |

**Please give reasons for your score? (for question 7)**

- |    |   |
|----|---|
| 1. | NO  |
| 2. | only had 2 lesson with him. couldn't give a proper score. |

**Please give reasons for your score? (for question 8)**

- |    |   |
|----|---|
| 1. | HE DID NOT COMPLETE                                       |
| 2. | only had 2 lesson with him. couldn't give a proper score. |

**Please give reasons for your score? (for question 9)**

- |    |   |
|----|---|
| 1. | only had 2 lesson with him. couldn't give a proper score. |
|----|---|

**Please give reasons for your score? (for question 10)**

- |    |   |
|----|---|
| 1. | only had 2 lesson with him. couldn't give a proper score. |
|----|---|

**Please comment on this faculty member's strengths**

- |    |                         |
|----|-------------------------|
| 1. | -----                   |
| 2. | ok                      |
| 3. | Asked if we needed help |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |    |  |
|----|--|
| 1. | Please don't assign him to teach any class. I rather watched online. |
| 2. | Tutorial class are important for students, maybe can teach more?     |
| 3. | ok   |
| 4. | Help students to understand how to do or approach the questions      |

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2019/2020 Semester 2

Date: 12-MAR-2021 04:31 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE7205 (RESEARCH METHODS)

Method: LEC, Group: A

Actual Class Size: 42

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	27	4.04	1.07	12	7	6	1	1
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	27	4.15	.93	13	6	7	1	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	27	4.22	.92	12	11	3	0	1
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	27	4.07	.98	11	9	6	0	1
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	27	4.07	.98	11	9	6	0	1
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	27	4.07	1.02	11	10	4	1	1
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	27	4.15	.89	11	11	3	2	0
8	<b>Assessment - The faculty member teaching this course :</b> Set assessment tasks that enabled me to demonstrate my achievement of the intended learning outcomes	27	4.19	.82	12	8	7	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	27	4.11	.96	11	10	5	0	1
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	27	4.22	.92	12	11	3	0	1

(Individual)

Mean Teaching Score: 4.13

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

**Please comment on this faculty member's strengths**

1.	Nice
2.	The form of participation is quite interesting.
3.	none
4.	Very good

**Please comment on how the faculty member might improve the teaching and learning in this course.**

1.	Nice
2.	Maybe can provide more examples in the lecture.
3.	none

**Faculty Comments (max 500 chars)**

Characters typed:

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Student Feedback on Teaching for Academic Year 2019/2020 Semester 2

Date: 12-MAR-2021 04:31 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE6227 (GENETIC ALGORITHMS & MACHINE LEARNING)

Method: LEC, Group: A

Actual Class Size: 64

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	25	4.12	.95	12	5	7	1	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	25	4.16	.78	10	9	6	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	25	4.24	.81	11	10	3	1	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	25	4.2	.85	11	9	4	1	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	25	4	.85	8	10	6	1	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	25	3.96	.92	9	7	8	1	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	25	4	.89	9	8	7	1	0
8	<b>Assessment - The faculty member teaching this course :</b> Set assessment tasks that enabled me to demonstrate my achievement of the intended learning outcomes	25	4.12	.91	11	7	6	1	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	25	4.2	.89	12	7	5	1	0
10	<b>Engaged teaching</b> Highlighted current research and development in the field	25	4.28	.83	12	9	3	1	0

(Individual)

Mean Teaching Score: 4.13

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

**Please comment on this faculty member's strengths**

- |    |  |
|----|--|
| 1. | Awesome analogy between PSO and nature swarm search.   |
| 2. | Prof Suganthan is knowledgeable in the subject's topics, and allows students to approach him for advice on the coursework. Provides constructive feedback as well.   |
| 3. | Clear instructions on assignments and gives good feedback on how to approach the problem Because this is a new course, there is no past year recording to rely on as the COVID19 virus situation continues. The professor makes recordings for the student to understand the lecture better. |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |    |  |
|----|--|
| 1. | Possible to have Machine Learning first then GA portion behind.  |
| 2. | I am disappointed about this course, of course one reason is COVID-19 lead to course can not be conducted smoothly. Another reason is because this is new course, therefore there is no passed year lecture video, so the learning material uploaded is very late. NTU should conduct online live course instead of just upload video or materials. It is very bad learning experience about this so interesting course. |
| 3. | Please upload the notes on time and not delay 5 weeks before doing so. It make it as if we never took the module. Additionally, the school mention that anything taught after week 10 cannot be tested but yet you still decided to include those in the exams.  |
| 4. | It will be best if he can inform students early whenever there are changes to the exam schedule, topics tested, as well as assignment requirements and deadlines. So that students will be well-prepared to handle the workload and avoid last-minute revisions, especially during this critical period when the quiz is pushed forward by 2-3 weeks due to COVID-19.  |
| 5. | The assignments and lecture content are too huge of a difference in terms of difficulty. The lecture cover the basics but the code given was programmed at a very high level which made the assignment very difficult to proceed.  |

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2019/2020 Semester 1

Date: 12-MAR-2021 04:30 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE6222 (MACHINE VISION)

Method: LEC, Group: A

Actual Class Size: 93

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	48	4.42	.67	25	18	5	0	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	48	4.52	.58	27	19	2	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	48	4.54	.58	28	18	2	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	48	4.56	.54	28	19	1	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	48	4.42	.7	26	16	6	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	48	4.27	.73	21	19	8	0	0
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	48	4.48	.65	27	17	4	0	0
8	<b>Assessment - The faculty member teaching this course :</b> Clearly explained the requirements of assessment tasks to enable me to understand the purpose of the task	48	4.42	.7	26	16	6	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	48	4.38	.7	24	18	6	0	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	48	4.48	.65	27	17	4	0	0

(Individual)

Mean Teaching Score: 4.45

Please give reasons for your score? (for question 1)

- |  |
|--|
| 1. Professor is always encourage us to think   |
| 2. The explanation was provided on the course material was very detailed. It is just too much content that makes it difficult to understand at the end of the session. |

Please give reasons for your score? (for question 2)

- |  |
|--|
| 1. I agree with it   |
| 2. Communication is very clear and understandable.                                   |
| 3. The lecture slides were clear and further illustrations were provided in writing. |
| 4. Unfortunately, I have some problems understanding this professor's accent.        |

Please give reasons for your score? (for question 3)

- |  |
|--|
| 1. Professor is willing to answer the questions and problems in and after lecture.     |
| 2. Professor was friendly and answered questions patiently during and after the class. |
| 3. He would be available after classes for few minutes discussion.                     |

Please give reasons for your score? (for question 4)

- |   |
|---|
| 1. By answering questions and provide different materials             |
| 2. Some concepts were explained in detail and was able to understand. |

Please give reasons for your score? (for question 5)

- |  |
|--|
| 1. Professor is willing to give discription and has discussion with students instead of just tell the truth. |
|--|

2. Not much critical thinking was involved during the class.

**Please give reasons for your score? (for question 6)**

1. I agree with that.  
 2. When any questions asked professor always helped and provided constructive feedback.

**Please give reasons for your score? (for question 7)**

1. Not only the slides but also other materials were provided to help us.  
 2. There were some examples explained but was different from the real world as the methods aren't currently employed. Some basic concepts were explained with real-world examples.

**Please give reasons for your score? (for question 8)**

1. Im very clear about what I should do by his explanation  
 2. Professor clearly mentioned on what to be done about the assignment

**Please give reasons for your score? (for question 9)**

1. Yes, it asked us to do that to have deeper understanding.  
 2. Not many challenging questions or thinking was involved in the class.

**Please give reasons for your score? (for question 10)**

1. I agree with that.  
 2. The concepts presented in the slides were clear and in detail.

**Please comment on this faculty member's strengths**

1. Good teaching approach towards student's learning  
 2. Very good.  
 3. The course contents are well-arranged and Prof. Suganthan explained the principles clearly. When students don't understand, Prof. Suganthan uses simple examples to help us understand, which is very helpful.  
 4. Regularly gives examples for students to have opportunities to apply what they have learned  
 5. Thanks!  
 6. Good  
 7. Good contents  
 8. Professor Ponnuthurai Naga Rathnam Suganthan was great in this lecture who strongly illustrate us many useful knowledge and skills with good logic and clear explanation.  
 9. no  
 10. Explanation is good  
 11. The notes are well organised and contain sufficient information for the students to revise and code out basic programmes to what is taught in the lecture.  
 12. His communication and the detailed explanation of the concepts. He clarifies the doubts and provides useful comments

**Please comment on how the faculty member might improve the teaching and learning in this course.**

1. More practical real world examples related to the vague theory concepts would help in understanding  
 2. Very good.  
 3. I am very satisfied in the teaching of this course and do not have other suggestions.  
 4. giving the basic idea or derivation behind the formulas  
 5. Thanks!  
 6. Speed of lecture can be slowed down appropriately  
 7. I think professor can try to show us some program running situation to more precisely illustrate the processing situation.  
 8. no  
 9. More practical examples can be more engaging  
 10. The content in the slides are too many and not sure how to implement it. Not many examples were provided.

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2019/2020 Semester 1

Date: 12-MAR-2021 04:29 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TA06

Actual Class Size: 29

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	10	4.5	.67	6	3	1	0	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	10	4.2	.98	6	0	4	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	10	4.7	.46	7	3	0	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	10	4.3	.9	6	1	3	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	10	4.8	.4	8	2	0	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	10	4.5	.67	6	3	1	0	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	10	4.3	1	6	2	1	1	0
8	<b>Assessment - The faculty member teaching this course :</b> Clearly explained the requirements of assessment tasks to enable me to understand the purpose of the task	10	4.6	.8	8	0	2	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to engage in discussion and debate	10	4.4	.66	5	4	1	0	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	10	4.5	.67	6	3	1	0	0

(Individual)

Mean Teaching Score: 4.48

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

1. Sorry to say that but accent quite strong & tone makes me sleepy....

Please give reasons for your score? (for question 3)

1. He always offered opportunities to meet him if needed

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

1. Hints were provided to solve each tutorial

Please give reasons for your score? (for question 6)

1. Hints were provided to solve each tutorial

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

Please comment on this faculty member's strengths

- 1. very clear illustration and explanation
- 2. very easy to understand, concepts explained clearly, encouraged participation.
- 3. Communicates clearly

Please comment on how the faculty member might improve the teaching and learning in this course.

- 1. For me (and my friends) ee2001 is a very difficult course. So I hope tutors can explain more about the concepts (and improve the videos on lams also?).

Faculty Comments (max 500 chars)

Characters typed:

Student Feedback on Teaching for Academic Year 2019/2020 Semester 1

Date: 12-MAR-2021 04:30 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TC01

Actual Class Size: 29

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	18	3.44	1.3	4	7	2	3	2
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	18	3.39	1.25	3	8	2	3	2
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	18	3.78	1.23	6	6	4	0	2
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	18	3.67	1.29	6	5	4	1	2
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	18	3.5	1.26	5	4	6	1	2
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	18	3.39	1.3	5	3	6	2	2
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	18	3.33	1.29	4	5	4	3	2
8	<b>Assessment - The faculty member teaching this course :</b> Clearly explained the requirements of assessment tasks to enable me to understand the purpose of the task	18	3.5	1.3	5	5	4	2	2
9	<b>Fostering engagement - This course:</b> Challenged me to engage in discussion and debate	18	3.5	1.26	4	7	3	2	2
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	18	3.56	1.38	6	5	2	3	2

(Individual)

Mean Teaching Score: 3.51

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

1. nil

Please give reasons for your score? (for question 9)

1. nil

Please give reasons for your score? (for question 10)

1. nil

2. Too slow in going through lecture slides

Please comment on this faculty member's strengths

- 1. Professor Suganthan go through each tutorial slowly and make sure students understood what he is teaching before moving on
- 2. He has a strength of persistence when it comes to explaining to the class. However the method that he teaching is not the best and good way of teaching to the class
- 3. Teaching skill was paced.
- 4. He is very detailed in explaining the slides and making us understand how the concept works.

Please comment on how the faculty member might improve the teaching and learning in this course.

- 1. N.A.
- 2. Stop reading from the lecture notes and stop using sample answer as teaching material. Use the white board, or projector to do on the spot working to show the class the way of approach to the question. is good to see him around, wish that he would teach better next time
- 3. He could probably give students advice on the tutorial questions, for example what to look out or tips/hints for approaching this certain question. That would really help us students to fully understand the module.
- 4. Great.
- 5. Nothing to improve on, in my opinion.
- 6. Teach the student step by step to understand the concept better.

Faculty Comments (max 500 chars)

Characters typed:

Save Comments  Print  Cancel

Student Feedback on Teaching for Academic Year 2018/2019 Semester 2

Date: 12-MAR-2021 04:22 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE8087 (LIVING WITH MATHEMATICS)

Method: LEC, Group: LE

Actual Class Size: 126

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	18	3.44	.9	2	7	6	3	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	18	3.56	.9	2	9	4	3	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	18	3.56	.83	2	8	6	2	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	18	3.44	.96	2	8	4	4	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	18	3.44	.9	2	7	6	3	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	18	3.44	.9	2	7	6	3	0
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	18	3.5	.9	2	8	5	3	0
8	<b>Assessment - The faculty member teaching this course :</b> Clearly explained the requirements of assessment tasks to enable me to understand the purpose of the task	18	3.44	.9	2	7	6	3	0
9	<b>Fostering engagement - This course:</b> Challenged me to make decisions about different perspectives in the subject area	18	3.44	.9	2	7	6	3	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	18	3.44	.9	2	7	6	3	0

(Individual)

Mean Teaching Score: 3.47

Please give reasons for your score? (for question 1)

1. Nil.
2. NIL.

Please give reasons for your score? (for question 2)

1. Nil.
2. Very hard to understand the explanation
3. NIL.

Please give reasons for your score? (for question 3)

1. Nil.
2. Encourage students to approach him in a friendly manner through emails.
3. NIL.

Please give reasons for your score? (for question 4)

1. Nil.
2. Slides are not structured enough so it is quite hard to understand and follow.
3. NIL.

Please give reasons for your score? (for question 5)

1.	Nil.
2.	NIL

Please give reasons for your score? (for question 6)

1.	Nil.
2.	NIL

Please give reasons for your score? (for question 7)

1.	Nil.
2.	NIL

Please give reasons for your score? (for question 8)

1.	Nil.
2.	No course outline was posted. Just briefly went through during class.
3.	NIL.

Please give reasons for your score? (for question 9)

1.	Nil.
2.	NIL

Please give reasons for your score? (for question 10)

1.	Nil.
2.	NIL

Please comment on this faculty member's strengths

1.	Clear explanations for the different examples shown during lecture.
2.	Prof Suganthan is available and patient when students have questions.
3.	knowledgeable
4.	NIL.
5.	Went through all of the tutorial questions and provided the answers for reference
6.	Friendly towards students.
7.	Clear and concise

Please comment on how the faculty member might improve the teaching and learning in this course.

1.	Prof Suganthan may make the lecture more interesting and passionate.
2.	Provide clearer steps (solutions)
3.	Instead of just reading directly from the slides, perhaps he could give more extra examples which can enhance our learning.
4.	Leave some of the examples in the lecture notes empty to allow the students to answer them to test their own understanding throughout the lecture.
5.	Tutorials questions should have the same difficulty level as the past year papers. I feel that the tutorial questions are too easy as compared to the questions during midterms, making it hard for us to practice as we do not have the resources or knowledge of what is going to be tested and the only questions we can practice are the tutorial questions. Perhaps, can think about moving away from lecture style to tutorial rooms so that students have more opportunity of clarifying their doubts.
6.	Slides can be annotated during lecture to show key points of the lesson

Faculty Comments (max 500 chars)

Characters typed: 0

Student Feedback on Teaching for Academic Year 2018/2019 Semester 2

Date: 12-MAR-2021 04:22 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE7205 (RESEARCH METHODS)

Method: LEC, Group: A

Actual Class Size: 62

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	34	4.06	.87	11	17	3	3	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	34	4.12	.8	12	15	6	1	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	34	4.18	.71	11	19	3	1	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	34	4.18	.89	14	15	2	3	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	34	4.09	.89	12	16	3	3	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	34	4.03	.82	10	17	5	2	0
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	34	4.12	.96	13	16	2	2	1
8	<b>Assessment - The faculty member teaching this course :</b> Clearly explained the requirements of assessment tasks to enable me to understand the purpose of the task	34	4.15	.84	12	17	4	0	1
9	<b>Fostering engagement - This course:</b> Challenged me to think deeply about the concepts	34	4.24	.88	15	14	4	0	1
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	34	4.24	.69	13	16	5	0	0

(Individual)

Mean Teaching Score: 4.14

Please give reasons for your score? (for question 1)

- 1. There was some attempt at engaging students
- 2. Prof. Ponnuthurai always involves students in the derivation of important formulas, which can make us fully understand the equation and its derivation.

Please give reasons for your score? (for question 2)

- 1. Prof. Ponnuthurai gives very clear descriptions for important contents, including equations, figures and necessary examples.

Please give reasons for your score? (for question 3)

- 1. Prof. Ponnuthurai always talks with us after class, and answers our questions in time and in detail.

Please give reasons for your score? (for question 4)

- 1. Prof. Ponnuthurai can always go into detail for important ideas and equations to ensure that we understand the concepts completely.

Please give reasons for your score? (for question 5)

- 1. In his class, he always comes up with some questions regarding the important concepts in the course and encourages students to think about them and answer them positively.

Please give reasons for your score? (for question 6)

- 1. I have not yet approached him for feedback.
- 2. After assignment, Prof. Ponnuthurai can summarize the common errors in the assignments and gives us detailed feedback.

**Please give reasons for your score? (for question 7)**

- |    |  |
|----|--|
| 1. | Using slides to teach was a bad idea since day 1.  |
| 2. | The detailed derivation and figure description given by Prof. Ponnuthurai can make me interested in this course and also help me a lot in my own research topic. |

**Please give reasons for your score? (for question 8)**

- |    |   |
|----|---|
| 1. | The criteria for grading were not clear from the beginning. A student had to ask the professor what was expected for the technical presentation, otherwise I strongly believe the professor would not have given any information, as this was done only 1 week before the deadline. |
| 2. | The assignments given by Prof. Ponnuthurai are very clear and are good summary of the important contents in class.  |

**Please give reasons for your score? (for question 9)**

- |    |  |
|----|--|
| 1. | Very nice course. The content is quite useful.                                   |
| 2. | This course inspired me in my own research topic and provides more ideas for me. |

**Please give reasons for your score? (for question 10)**

- |    |   |
|----|---|
| 1. | There is too much to go through in the short time that we had.  |
| 2. | Prof. Ponnuthurai always selects the most basic ideas and also the most important ideas in the contents and goes into detail to enhance the fundamentals. |

**Please comment on this faculty member's strengths**

- |     |   |
|-----|---|
| 1.  | goof  |
| 2.  | Explain important concepts very clearly.  |
| 3.  | He is clear about why the particular material relates to the real world   |
| 4.  | He repeats important points many times.   |
| 5.  | Prof Ponnuthurai Naga ratnam Suganthan was able to convey his ideas intuitively and emphasize important knowledges many times.  |
| 6.  | Clear and informative instruction.  |
| 7.  | He seems to know the topic well   |
| 8.  | Prof. Ponnuthurai can give very representative examples regarding the course contents and he can describe the examples very clearly. In addition, he can explain the main concepts from several views which can help us understand them completely. |
| 9.  | Thanks very much for your lectures!   |
| 10. | Professor Suganthan gives the students examples and details to help the students understand the abstract concepts and theories.   |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |     |  |
|-----|--|
| 1.  | try to explain more  |
| 2.  | There is too much in one lecture. Could you please reduce some content in order to not give too much to understand in one lecture?   |
| 3.  | Focuses too much on what's coming for the exam, which turns students off when they note that something will not be on the exam.  |
| 4.  | Not a faculty member fit for teaching at all. Classes were on the base of the professor reading what was on the slides. I heard sometimes the professor answering to questions with "I don't know", laughing it off as if it was funny, which it isn't, and not making an effort to help the student. Even if the professor does not know the answer, it is no reason to laugh, as they are there to make us learn. The technical presentations were the worst part of this professor's teaching. Most of the time he was on the phone, and when it was time for questions, he asked questions just to be funny, not to actually make a positive contribution. Not only is this inappropriate behaviour from a professor, he also took some of the time of the questions with this unnecessary intervention, preventing other students from asking questions. Furthermore, there were issues with booking the room because the system allowed for double bookings. Therefore, there were interruptions to the presentation by other professors. This was not our professor's fault. However, he made no effort to solve the situation, and it had to be the student who was currently presenting to handle it, being the one talking to the professor that interrupted the presentation. It is not a student's job to fix this problem, but the professor's! |
| 5.  | He is talking fast, and especially, for the first classes this creates an difficulty to understand. Actually, he pauses between the words (this makes him clear), however, he is still sayin word so fast. Note that, like I said it causes difficulty at the first classes but after a while everything becomes clear.  |
| 6.  | It would be much better if Prof Ponnuthurai Naga ratnam Suganthan could taught us some basic knowledge at first. But I think it is more likely my job to learn basic knowledge by myself.  |
| 7.  | will be awesome if there were subtiles, sometimes due to the accent it could be hard to understand   |
| 8.  | Please Please improve on the way you try to explain the concept to the students. Sometimes you seem to brush through certain concept so quickly that most of the students are lost. It is obvious when you ask question and no one know what you are asking cause everyone has hard -time trying to catch up the concept. Perhaps more time is required to explain the concept well  |
| 9.  | Maybe more examples can further help us understanding the application of the contents.   |
| 10. | How about a practical assignment?  |
| 11. | Sometimes I can hardly understand what the professor said in the class because I think the professor has heavy accent.   |

**Faculty Comments (max 500 chars)**

Characters typed: 0

Student Feedback on Teaching for Academic Year 2018/2019 Semester 1

Date: 12-MAR-2021 04:21 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE6222 (MACHINE VISION)

Method: LEC, Group: A

Actual Class Size: 102

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	42	4.48	.59	22	18	2	0	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	42	4.55	.63	26	13	3	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	42	4.55	.59	25	15	2	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	42	4.64	.53	28	13	1	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	42	4.45	.73	25	11	6	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	42	4.31	.71	19	17	6	0	0
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	42	4.55	.63	26	13	3	0	0
8	<b>Assessment - The faculty member teaching this course :</b> Gave useful information on assessment, such as clear instructions, practice questions, marking criteria, or rubrics	42	4.29	.73	18	19	4	1	0
9	<b>Fostering engagement - This course:</b> Challenged me to find my own solutions to problems	42	4.31	.67	18	19	5	0	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	42	4.52	.59	24	16	2	0	0

(Individual)

Mean Teaching Score: 4.47

Please give reasons for your score? (for question 1)

1. He is always motivate us about how useful this subject for our future career

Please give reasons for your score? (for question 2)

1. He writes a lot for explaining concepts which I feel is very useful.  
2. From my perspective, professor really has a good performance during the class, except that he has a accent which, sometimes, makes it hard to fully understand him.  
3. He is presenting the subject very well  
4. For each computational method, prof Suganthan will give detail procedure

Please give reasons for your score? (for question 3)

1. Always give a chance to ask at the class

Please give reasons for your score? (for question 4)

1. He give us some example of the use of the subject in daily life

Please give reasons for your score? (for question 5)

1. He give good explanation about the 'why' in our subject and sometimes ask the student about it

Please give reasons for your score? (for question 6)

1. He just give the assignment at the last week of his teaching

**Please give reasons for your score? (for question 7)**

- |   |
|---|
| 1. He always gives lots of easy examples to understand complex concepts                       |
| 2. He give us some example using C+/Matlab, it is really useful for us to get more understand |

**Please give reasons for your score? (for question 8)**

- |   |
|---|
| 1. He just give the assignment at the last week of his teaching |
|---|

**Please give reasons for your score? (for question 9)**

- |   |
|---|
| 1. He always ask the student about the reason of something in the subject |
|---|

**Please give reasons for your score? (for question 10)**

- |  |
|--|
| 1. He introduced us first about the subject, and then bring it to the next level |
|--|

**Please comment on this faculty member's strengths**

- |  |
|--|
| 1. He gives lots of relatable examples which makes understanding new concepts easier.  |
| 2. He illustrated key concepts during the class, and made sure that online materials includes his drawing, there were issues that the online lectures did not capture his illustrations on screen. He immediately tended to the issue and addressed it by providing the recordings from the previous year. |
| 3. 1) Methodical and step by step approach for problems and derivations 2) Effective speaker and communicator 3) Patiently teaches the concepts  |
| 4. Professor often gives us illustrations, such as drawing a picture, which helps us to better understand the important content.   |
| 5. very nice   |
| 6. Good on teaching students about detailed procedures of particular algorithm   |
| 7. Can use picture to explain the idea clearly, which is helpful.  |
| 8. He has good communication and presentation skills. He clearly have deep knowledge about the subject.  |
| 9. Professor has presented a thorough survey of machine vision concepts and has given some sample codes for us to implement and understand how they work practically.  |
| He has also written some tutorial questions which aim to reinforce our understanding of machine vision concepts, with answers provided at the end of his half of the semester.   |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |   |
|---|
| 1. His classes are really good. But the course content should include new algorithms which are currently being used in the real world right now. Some of the algorithms taught are very old.  |
| 2. It may be good if he can improve on his pronunciation on certain words, but after listening to it again a few times, I can understand what he's trying to say.   |
| 3. 1) Subject content is slightly outdated, any revisions would be very welcome.  |
| 4. Professor has good skills in teaching in general. If he could have a good accent, he may reach a higher level in teaching fields.  |
| 5. May provide more exercise for practice   |
| 6. Too much content for 3 hours, hard to follow all the things  |
| 7. 1. Give an assignment/task that cover all the concept to make the student more understand about the subject 2. Overall, always encourage us to get success in the future. So, thanks for being a really good teacher for me at my first semester at NTU! |
| 8. Professor can try to implement some of the codes on MATLAB or other frameworks to show us what the desired output should look like.  |

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2018/2019 Semester 1

Date: 12-MAR-2021 04:19 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TA03

Actual Class Size: 26

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	12	4.17	.9	5	5	1	1	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	12	4.17	.9	5	5	1	1	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	12	4.17	.69	4	6	2	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	12	4.25	.72	5	5	2	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	12	4.25	.72	5	5	2	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	12	4.25	.72	5	5	2	0	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	12	4.25	.92	6	4	1	1	0
8	<b>Assessment - The faculty member teaching this course :</b> Gave useful information on assessment, such as clear instructions, practice questions, marking criteria, or rubrics	12	4.25	.92	6	4	1	1	0
9	<b>Fostering engagement - This course:</b> Challenged me to engage in discussion and debate	12	4.17	.99	6	3	2	1	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	12	4.25	.92	6	4	1	1	0

(Individual)

Mean Teaching Score: 4.22

Please give reasons for your score? (for question 1)

1. Like to talk lengthy on slides even though we watched LAMS already

Please give reasons for your score? (for question 2)

1. Like to talk lengthy on slides even though we watched LAMS already

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

1. Like to talk lengthy on slides even though we watched LAMS already

Please give reasons for your score? (for question 8)

1. Like to talk lengthy on slides even though we watched LAMS already

**Please give reasons for your score? (for question 9)**

1. Like to talk lengthy on slides even though we watched LAMS already

**Please give reasons for your score? (for question 10)**

1. Like to talk lengthy on slides even though we watched LAMS already

**Please comment on this faculty member's strengths**

1. Very clear, precise, gives tips on how to tackle questions instead of just blindly giving answers.

2. Prof Suganthan is very approachable and friendly. During tutorials, he illustrates the common mistakes made by students and explains how we can avoid them. He also explains the key concepts that the lecture notes are trying to convey, which helps in my understanding. Prof Suganthan also adds on to the tutorial answers with his own writings and explains alternative ways we can solve the same problem, which is what Circuit Analysis is about. Although attendance for this tutorial class was poor, Prof Suganthan still tries his best to ensure that the students who attend his class understand the concepts well, which is greatly appreciated and I must thank him for that.

**Please comment on how the faculty member might improve the teaching and learning in this course.**

1. Should not spend so much time going thru the slides. Just a brief 5 minutes summary will do. Dedicate an hour to the tutorial, and another hour to past year questions as to better prepare students. EE2001 is hard, and having a poor tutor just worsens the situation:(

2. NIL. I enjoyed Prof Suganthan's classes.

**Faculty Comments (max 500 chars)**

Characters typed: 0

Save Comments  Print  Cancel

Student Feedback on Teaching for Academic Year 2018/2019 Semester 1

Date: 12-MAR-2021 04:20 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TC01

Actual Class Size: 26

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	23	3.48	1.02	3	10	6	3	1
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	23	3.39	.97	2	10	7	3	1
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	23	3.78	.83	3	14	5	0	1
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	23	3.52	1.02	3	11	5	3	1
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	23	3.26	.9	1	9	9	3	1
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	23	3.35	.96	2	9	8	3	1
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	23	3.26	.94	1	10	7	4	1
8	<b>Assessment - The faculty member teaching this course :</b> Gave useful information on assessment, such as clear instructions, practice questions, marking criteria, or rubrics	23	3.39	.97	2	10	7	3	1
9	<b>Fostering engagement - This course:</b> Challenged me to engage in discussion and debate	23	3.35	1	2	10	6	4	1
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	23	3.48	.97	2	12	5	3	1

(Individual)

Mean Teaching Score: 3.44

Please give reasons for your score? (for question 1)

- 1. He prefers students to keep quiet when he teaches.
- 2. Mr Ponnuthurai always ensure that we understand what we are learning

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

- 1. Mr Ponnuthurai always ensure that the my point are explained to us

Please give reasons for your score? (for question 5)

- 1. Usually skips examples that could strengthen our learning and concepts.

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

- 1. Goes through answers simply via a printed piece of paper on a projector.

Please give reasons for your score? (for question 8)

1. He does not seem to know how our exam format is like.

**Please give reasons for your score? (for question 9)**

1. Prefers students to keep quiet.

**Please give reasons for your score? (for question 10)**

**Please comment on this faculty member's strengths**

- |  |
|--|
| <input type="checkbox"/> 1. Prof is clear about what he is teaching  |
| <input type="checkbox"/> 2. Goes through lecture before starting tutorial.   |
| <input type="checkbox"/> 3. Went through the key points of the lecture notes and provided clear explanation.   |
| <input type="checkbox"/> 4. He is clear in his speech when he teaches.   |
| <input type="checkbox"/> 5. Mr Ponnuthurai is a nice and friendly prof. I'm able to ask questions and he always tries his best to explain to us  |
| <input type="checkbox"/> 6. Assoc Prof Ponnuthurai Naga Ratnam Suganthan knows the subject very well, but his teaching style is somewhat mundane as he just goes through the tutorial answers. |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |  |
|--|
| <input type="checkbox"/> 1. He needs to be more engaging   |
| <input type="checkbox"/> 2. Nil.   |
| <input type="checkbox"/> 3. He could use a little more expression in his teaching. Voice is a little monotonous, which makes the class a little still. Sometimes, it feels like he is reading from the book.<br>He could add in some real life experience in his teaching, to make lessons more interesting. |
| <input type="checkbox"/> 4. It would be nice if he could spark the students' interest in the subject, and explain some of the formulas instead of telling the students to remember everything in the textbook.   |

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2018/2019 Semester 1

Date: 12-MAR-2021 04:20 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TC05

Actual Class Size: 28

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	21	3.81	.66	3	11	7	0	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	21	3.86	.64	3	12	6	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	21	4.05	.65	5	12	4	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	21	3.95	.58	3	14	4	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	21	3.81	.66	3	11	7	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	21	3.67	.71	3	8	10	0	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	21	3.81	.66	3	11	7	0	0
8	<b>Assessment - The faculty member teaching this course :</b> Gave useful information on assessment, such as clear instructions, practice questions, marking criteria, or rubrics	21	3.71	.88	3	11	6	0	1
9	<b>Fostering engagement - This course:</b> Challenged me to engage in discussion and debate	21	3.81	.79	4	10	6	1	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	21	3.86	.71	4	10	7	0	0

(Individual)

Mean Teaching Score: 3.83

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

1. despite the fact that this an E-lecture module, he went through the topic first before processing to the tutorial question.

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

**Please give reasons for your score? (for question 10)**

**Please comment on this faculty member's strengths**

- |    |   |
|----|---|
| 1. | Does summary of topic, friendly   |
| 2. | he went through the topic with us in order to give us a better understanding before going through the tutorial which is something that I really appreciate. |
| 3. | :   |
| 4. | Assoc Prof Ponnuthurai Naga ratnam Suganthan has solutions ready for us every single lesson for easy digestion/ understanding.                              |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |    |   |
|----|---|
| 1. | Make class more interesting. Do more examples   |
| 2. | His voice very monotonous can fall asleep. Content wise, a lot to memorise, should have formula sheet.  |
| 3. | sometime the tutorial class ended earlier than expected, maybe he can use the remaining time to give other examples to further our understanding of the topic.  |
| 4. | :   |
| 5. | Assoc Prof Ponnuthurai Naga ratnam Suganthan is difficult to understand in terms of his speech. I often find myself getting confused at the things he says. Fortunately, he flashes the solutions on the projector. Hence, I would always refer to the screen to clarify my doubts, rather than ask him questions - to avoid further confusion. |

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2017/2018 Semester 2

Date: 12-MAR-2021 04:25 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE8087 (LIVING WITH MATHEMATICS)

Method: LEC, Group: LE

Actual Class Size: 115

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	40	3.78	1.01	10	17	8	4	1
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	40	3.75	.99	9	18	8	4	1
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	40	3.93	.96	12	17	8	2	1
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	40	3.9	1.02	13	15	8	3	1
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	40	3.9	.94	12	15	11	1	1
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	40	3.73	.97	10	13	14	2	1
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	40	3.78	.96	10	15	12	2	1
8	<b>Assessment - The faculty member teaching this course :</b> Gave useful information on assessment, such as clear instructions, practice questions, marking criteria, or rubrics	40	3.83	1.05	11	17	8	2	2
9	<b>Fostering engagement - This course:</b> Challenged me to find my own solutions to problems	40	3.88	.95	11	17	9	2	1
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	40	3.8	1	10	17	10	1	2

(Individual)

Mean Teaching Score: 3.83

Please give reasons for your score? (for question 1)

- 1. Humorous and clean
- 2. nil

Please give reasons for your score? (for question 2)

- 1. Very understandable
- 2. nil
- 3. accent makes his speech unclear

Please give reasons for your score? (for question 3)

- 1. Provided us his office number and we can consult him whenever we have any doubts in the lecture.
- 2. Tell us to send him an email if we need his help
- 3. nil

Please give reasons for your score? (for question 4)

- 1. Provided us with a lot of examples for a topic to make us understand the concept even more clearly.
- 2. Most notably, he taught solutions for specific cases (e.g. when it comes to solving polynomials of power higher than 3), but tested a different type of case in the test. Perhaps teaching a general solution for all cases, or at least covering all cases, would be better.
- 3. He explained most of the important points
- 4. nil

**Please give reasons for your score? (for question 5)**

1.	It can be argued that critical thinking was encouraged by not teaching the whole topic in its entirety.
2.	Closely related to our real life problems
3.	nil

**Please give reasons for your score? (for question 6)**

1.	Clear our doubts in certain terms
2.	nil

**Please give reasons for your score? (for question 7)**

1.	Basically, this whole course is related to real life problem
2.	nil

**Please give reasons for your score? (for question 8)**

1.	It was rather disappointing that something out of syllabus was tested for the most recent midterm. While new content and challenges can be argued to be a good learning experience, it isn't funny when that experience is 12.5% of my overall grade for the subject.
2.	He reminds us the percentage of the Quizzes and Finals.
3.	nil

**Please give reasons for your score? (for question 9)**

1.	It is related to physic and math.
2.	nil

**Please give reasons for your score? (for question 10)**

1.	Very understandable
2.	nil

**Please comment on this faculty member's strengths**

1.	He will ensure that students understand the concept before proceeding to the next topic.
2.	Good
3.	good
4.	Very helpful professor, provided us with what we need to prepare for the final exam and midterm. I learn so much about math and how useful it is in real life, very glad to be in his class.
5.	He is approachable.
6.	-humorous -patience -clear -loud
7.	Patient and kind
8.	Explain examples clearly
9.	Good prof who put in extra effort to make sure we learn
10.	Professor Suganthan is very knowledgeable, and is very detailed in his teaching. He provides a lot of examples which aids us in understanding.
11.	Lecture notes are very clear and easy to understand.
12.	The faculty member was knowledgeable about the subject of the course.

**Please comment on how the faculty member might improve the teaching and learning in this course.**

1.	The quiz questions should be more understandable
2.	good
3.	I will be very upfront - I am writing this review because I am upset with the way the test was conducted. Even if the testing of new material can be interpreted as testing one's ability to understand the content of the subject, it is less 'exciting' when it is done as a surprise, and also makes up 12.5% of my overall grade. Perhaps if some 'stretching' of concepts is needed, there are better ways of doing it. Putting it in a test just comes off as a lazy attempt to boost learning and curiosity in the subject. Perhaps moving forward, you can consider not testing things that are out of syllabus for a test, or perhaps be more clear that these things can and will happen. Also, making the test "open-book" does not facilitate learning, it promotes callousness.
4.	It is good if he can explain on the concept instead of reading off the slide and solution.
5.	If expression for the quiz question can be more direct and easier to understand, it will be better.
6.	More summaries
7.	He could be more engaging.
8.	He should try to make the lecture more interesting and maybe he could talk abit faster.
9.	The faculty member could use a more lively tone during the lecture to engage students.
10.	Nil

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2017/2018 Semester 2

Date: 12-MAR-2021 04:25 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE7205 (RESEARCH METHODS)

Method: LEC, Group: A

Actual Class Size: 53

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	33	4.06	1.28	17	9	2	2	3
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	33	4.27	1.08	18	11	1	1	2
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	33	4.21	.88	16	9	7	1	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	33	4.15	1.16	18	7	5	1	2
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	33	4.03	1.36	19	5	3	3	3
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	33	4	1.26	16	8	5	1	3
7	<b>Educational Technology and Teaching approaches</b> This faculty member often illustrated or explained the subject matter with real-world examples that gave more meaning to the material	33	4.09	1.16	16	10	3	2	2
8	<b>Assessment - The faculty member teaching this course :</b> Gave useful information on assessment, such as clear instructions, practice questions, marking criteria, or rubrics	33	4.24	.99	19	5	7	2	0
9	<b>Fostering engagement - This course:</b> Challenged me to find my own solutions to problems	33	4.3	1	19	8	4	1	1
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	33	4.36	.95	19	10	2	1	1

(Individual)

Mean Teaching Score: 4.17

Please give reasons for your score? (for question 1)

- 1. I had to watch other online videos to learn certain concepts.
- 2. Dry engagement.
- 3. I was involved and interested because the content is relevant

Please give reasons for your score? (for question 2)

- 1. Some words are his favorites such as, 'is it okay!', 'so'. Cutting down those words can save a lot of time.
- 2. Talking to himself. Not really asking feedback if students understand.

Please give reasons for your score? (for question 3)

- 1. Never intended to seek help

Please give reasons for your score? (for question 4)

- 1. I had to use other online videos to understand the concepts. Most of his 3 hour lectures can be taught in less than 1 hour with proper examples.
- 2. Both his teaching and lectures notes/slides were poorly designed.

Please give reasons for your score? (for question 5)

- 1. I think most of the professors are conducting same courses for many years and they are programmed only to teach that is needed to pass the exams.
- 2. Rote memorization of formulas.

**Please give reasons for your score? (for question 6)**

- |    |  |
|----|--|
| 1. | There is no opportunity.                                     |
| 2. | No feedback = students do not know what they are doing wrong |

**Please give reasons for your score? (for question 7)**

- |    |  |
|----|--|
| 1. | There are many other good teaching materials available online. |
|----|--|

**Please give reasons for your score? (for question 8)**

- |    |                       |
|----|-----------------------|
| 1. | Nothing was discussed |
|----|-----------------------|

**Please give reasons for your score? (for question 9)**

- |    |                                  |
|----|----------------------------------|
| 1. | Some of the concepts are useful. |
|----|----------------------------------|

**Please give reasons for your score? (for question 10)**

- |    |  |
|----|--|
| 1. | It is not only him, most of the professors are just giving a speech not a lecture. |
|----|--|

**Please comment on this faculty member's strengths**

- |    |   |
|----|---|
| 1. | Understands the material very well.                                 |
| 2. | Easy to follow and understand.                                      |
| 3. | Okay.   |
| 4. | I am not sure if there is any point that can be said as a strength. |
| 5. | The teacher is very clear about the lecture.                        |
| 6. | Nothing notable.  |
| 7. | Clear communication   |
| 8. | professional, nice, in details                                      |
| 9. | Clear communication. Pace.  |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |    |  |
|----|--|
| 1. | A little too much material squeezed into 5 weeks of lecture.   |
| 2. | He should redesign the course and method of delivery.  |
| 3. | If the concept is in more detail and easy to understand, that would be good.   |
| 4. | I timed how many minutes he spends on saying 'it is okay' and 'so'. In a 2 hour 40 mins lecture, he spends approximately 15-20 mins on these two words. I think the lecture time can be effectively used with more meaningful examples if he realizes that just 2 words takes unwanted 15-20 mins. |
| 5. | It would be better if the slides can be more orderly.  |
| 6. | Make it more interactive. Give good feedback for presentation rather than skimpy remarks.  |
| 7. | Provide feedback to students   |
| 8. | no humor   |
| 9. | Giving worked out solutions for extra questions to practice.   |

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2017/2018 Semester 1

Date: 12-MAR-2021 04:23 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TA08

Actual Class Size: 30

Criteria for consideration	Total Responses	Mean	SD	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
<b>Encouraged engagement in the course</b> 1 As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	8	3.5	.87	1	3	3	1	0
<b>Communicated clearly</b> 2 This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	8	3.5	.87	1	3	3	1	0
<b>Was approachable</b> 3 This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	8	3.75	.83	1	5	1	1	0
<b>Helped students understand important concepts</b> 4 This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	8	3.75	.83	1	5	1	1	0
<b>Encouraged critical thinking in the subject area</b> 5 The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	8	3.5	.87	1	3	3	1	0
<b>Provided timely feedback that helped my progress</b> 6 This faculty member gave useful comments that assisted students' learning	8	3.5	.87	1	3	3	1	0
<b>Conducted valuable</b> A The type of class conducted by this faculty member was helpful to my learning.	8	3.5	.87	1	3	3	1	0
<b>Presented the subject matter in a methodical and logical way</b> I The way this faculty member designed and conducted classes helped to build my knowledge and understanding in a systematic way.	8	3.63	.86	1	4	2	1	0

(Individual)

Mean Teaching Score: 3.59

Do you have any further comments on this faculty member's encouragement of engagement in the course?

Do you have any further comments on this faculty member's ability to communicate clearly?

Do you have any further comments about this faculty member's approachability?

Do you have any further comments about how this faculty member helped you understand concepts?

Do you have any further comments to make about this faculty member's encouragement of critical thinking?

Do you have any further comments on the type of class conducted by this faculty member?

Do you have any further comments on the way this faculty member presented the subject matter in a methodical and logical way?

Please comment on this faculty member's strengths

1. -
2. state clearly
3. Nil
4. Good, approachable, would give useful advises and methods on problems students asked
5. revise the content before going through the tutorial
6. engaging

Please comment on how the faculty member might improve the teaching and learning in this course.

1.	-
2.	na
3.	Nil
4.	Don't feel discouraged by declining attendance (it is commonly seen in tutorials) keep yourself motivated, don't be influenced by negative environment
5.	none
6.	sometimes he is a little monotonous

**On average, I rate the difficulty of the content taught by this faculty member as compared to the rest of the courses I have taken, as**

much more difficult	2
slightly more difficult	3
same	2
slightly easier	0
much easier	0

**I attended:**

80% or more of the classes taught by this faculty member	1
Somewhat less than 80% of the classes taught by this faculty member	5
Less than 50% of the classes taught by this faculty member	1

**Where it was required, I prepared for the classes taught by this faculty member:**

All, or most of the time	4
Some of the time	1
Hardly any of the time	2
Never	0

**Faculty Comments (max 500 chars)**

Characters typed:

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Student Feedback on Teaching for Academic Year 2017/2018 Semester 1

Date: 12-MAR-2021 04:23 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TA10

Actual Class Size: 13

Criteria for consideration	Total Responses	Mean	SD	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
<b>Encouraged engagement in the course</b> 1 As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	7	4.29	.45	2	5	0	0	0
<b>Communicated clearly</b> 2 This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	7	4.57	.49	4	3	0	0	0
<b>Was approachable</b> 3 This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	7	4.43	.49	3	4	0	0	0
<b>Helped students understand important concepts</b> 4 This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	7	4.29	.45	2	5	0	0	0
<b>Encouraged critical thinking in the subject area</b> 5 The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	7	4.43	.49	3	4	0	0	0
<b>Provided timely feedback that helped my progress</b> 6 This faculty member gave useful comments that assisted students' learning	7	4.57	.49	4	3	0	0	0
<b>Conducted valuable</b> A The type of class conducted by this faculty member was helpful to my learning.	7	4.57	.49	4	3	0	0	0
<b>Presented the subject matter in a methodical and logical way</b> I The way this faculty member designed and conducted classes helped to build my knowledge and understanding in a systematic way.	7	4.43	.49	3	4	0	0	0

(Individual)

Mean Teaching Score: 4.43

Do you have any further comments on this faculty member's encouragement of engagement in the course?

Do you have any further comments on this faculty member's ability to communicate clearly?

Do you have any further comments about this faculty member's approachability?

Do you have any further comments about how this faculty member helped you understand concepts?

Do you have any further comments to make about this faculty member's encouragement of critical thinking?

Do you have any further comments on the type of class conducted by this faculty member?

Do you have any further comments on the way this faculty member presented the subject matter in a methodical and logical way?

Please comment on this faculty member's strengths

- |   |
|---|
| 1. He encouraged us to think about the subject by asking questions during tutorial and also answered any questions we had. He also presented the subject topics in a clear and methodical way, allowing me to follow the lesson easily and improved my learning of the subject. |
| 2. Prof Suganthan explains the tutorial questions very clearly and does a quick summary.  |
| 3. -  |
| 4. Able to present solutions and explain concepts clearly. Also tell students what are some of the common mistakes and tips to ace the subjects.  |

Please comment on how the faculty member might improve the teaching and learning in this course.

- |        |
|--------|
| 1. NIL |
|--------|

- |    |  |
|----|--|
| 2. | I think it would be better if Prof Suganthan can explain in more details. I found this course difficult in terms of calculating. I can get the concept for each topic quite easily but when I do the tutorials, it took me a long time to apply what I have learned. And since the calculation was very complicated, I made mistakes between steps. My tutorial usually does not last for 2 hours. Prof Suganthan is able to finish the tutorial questions early. So, I would recommend that the Prof show us how to attempt just one question out of the four or five tutorial questions from scratch. I believe in this way, I can learn more effectively. |
| 3. | -  |
| 4. | Not sure if it is due to my timeslot(Friday morning) and class size, but I would prefer a more interactive tutorial where I can explore and know more about the subject.   |

**On average, I rate the difficulty of the content taught by this faculty member as compared to the rest of the courses I have taken, as**

much more difficult	<input type="radio"/> 1
slightly more difficult	<input type="radio"/> 2
same	<input type="radio"/> 2
slightly easier	<input type="radio"/> 1
much easier	<input type="radio"/> 1

**I attended:**

80% or more of the classes taught by this faculty member	<input type="radio"/> 4
Somewhat less than 80% of the classes taught by this faculty member	<input type="radio"/> 3
Less than 50% of the classes taught by this faculty member	<input type="radio"/> 0

**Where it was required, I prepared for the classes taught by this faculty member:**

All, or most of the time	<input type="radio"/> 5
Some of the time	<input type="radio"/> 2
Hardly any of the time	<input type="radio"/> 0
Never	<input type="radio"/> 0

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2017/2018 Semester 1

Date: 12-MAR-2021 04:24 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TC05

Actual Class Size: 25

Criteria for consideration	Total Responses	Mean	SD	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
<b>Encouraged engagement in the course</b> 1 As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	20	3.4	.86	2	7	8	3	0
<b>Communicated clearly</b> 2 This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	20	3.45	.92	2	9	5	4	0
<b>Was approachable</b> 3 This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	20	3.8	.68	2	13	4	1	0
<b>Helped students understand important concepts</b> 4 This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	20	3.4	1.02	2	9	5	3	1
<b>Encouraged critical thinking in the subject area</b> 5 The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	20	3.5	.97	2	10	5	2	1
<b>Provided timely feedback that helped my progress</b> 6 This faculty member gave useful comments that assisted students' learning	20	3.35	1.01	2	8	6	3	1
<b>Conducted valuable</b> A The type of class conducted by this faculty member was helpful to my learning.	20	3.35	1.01	2	8	6	3	1
<b>Presented the subject matter in a methodical and logical way</b> I The way this faculty member designed and conducted classes helped to build my knowledge and understanding in a systematic way.	20	3.65	.79	2	11	5	2	0

(Individual)

Mean Teaching Score: 3.51

Do you have any further comments on this faculty member's encouragement of engagement in the course?

Do you have any further comments on this faculty member's ability to communicate clearly?

Do you have any further comments about this faculty member's approachability?

Do you have any further comments about how this faculty member helped you understand concepts?

Do you have any further comments to make about this faculty member's encouragement of critical thinking?

Do you have any further comments on the type of class conducted by this faculty member?

Do you have any further comments on the way this faculty member presented the subject matter in a methodical and logical way?

Please comment on this faculty member's strengths

- |   |
|---|
| 1. Goes through the LAMs before proceeding to tutorial questions                        |
| 2. Nil  |
| 3. OK   |
| 4. -  |
| 5. Approachable   |
| 6. NIL  |
| 7. Easy to approach and good at explaining. Provided a lot of examples and explanations |
| 8. Solutions were clear and understandable  |

9.	Nil
10.	Nil

**Please comment on how the faculty member might improve the teaching and learning in this course.**

1.	Perhaps he could go through the home assignment questions after the deadline is over. This is so that we can learn what we did wrong.
2.	Nil
3.	OK
4.	Content can be delivered in a manner that is mixed with experience instead of just relying on Lecture Notes. Explanation of tutorial can be more in depth such as derivation etc.
5.	Change to a better teaching style
6.	Need to explain in a much easier terms
7.	NIL
8.	NIL
9.	Faculty member can make use of the whiteboard to discuss on tutorial questions instead of just flashing solution and explain from the solution
10.	Be more clear and help the student to understand the topic rather than just going through motion
11.	Nil

**On average, I rate the difficulty of the content taught by this faculty member as compared to the rest of the courses I have taken, as**

much more difficult	5
slightly more difficult	9
same	5
slightly easier	0
much easier	1

**I attended:**

80% or more of the classes taught by this faculty member	9
Somewhat less than 80% of the classes taught by this faculty member	9
Less than 50% of the classes taught by this faculty member	2

**Where it was required, I prepared for the classes taught by this faculty member:**

All, or most of the time	3
Some of the time	13
Hardly any of the time	4
Never	0

**Faculty Comments (max 500 chars)**

Characters typed:

Student Feedback on Teaching for Academic Year 2017/2018 Semester 2

Date: 12-MAR-2021 04:24 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE2001 (CIRCUIT ANALYSIS)

Method: TUT, Group: TD03

Actual Class Size: 22

	Criteria for consideration	Total Responses	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	11	3.73	.75	2	4	5	0	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	11	3.91	1	4	3	3	1	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	11	3.91	.67	2	6	3	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	11	4.09	.67	3	6	2	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	11	3.91	.79	3	4	4	0	0
6	<b>Provided timely feedback that helped my progress</b> this faculty member gave useful comments that assisted students' learning	11	3.91	.67	2	6	3	0	0
7	<b>Educational Technology and Teaching approaches</b> The way this faculty member conducted classes increased my understanding of the course	11	4	.74	3	5	3	0	0
8	<b>Assessment - The faculty member teaching this course :</b> Gave useful information on assessment, such as clear instructions, practice questions, marking criteria, or rubrics	11	3.91	.67	2	6	3	0	0
9	<b>Fostering engagement - This course:</b> Challenged me to find my own solutions to problems	11	3.91	.67	2	6	3	0	0
10	<b>Engaged teaching</b> Presented the subject matter in a methodical and logical way	11	4	.74	3	5	3	0	0

(Individual)

Mean Teaching Score: 3.93

Please give reasons for your score? (for question 1)

Please give reasons for your score? (for question 2)

Please give reasons for your score? (for question 3)

Please give reasons for your score? (for question 4)

Please give reasons for your score? (for question 5)

Please give reasons for your score? (for question 6)

Please give reasons for your score? (for question 7)

Please give reasons for your score? (for question 8)

Please give reasons for your score? (for question 9)

Please give reasons for your score? (for question 10)

**Please comment on this faculty member's strengths**

- |    |   |
|----|---|
| 1. | It is good that his explanation is clear.   |
| 2. | Takes his time to explain concepts properly. Always ensures our basic concepts are correct by re-asking simple questions for every tutorial question. |
| 3. | patient and kind  |
| 4. | Warm hearted to answer questions  |
| 5. | Very knowledgeable of the topic, as expected  |

**Please comment on how the faculty member might improve the teaching and learning in this course.**

- |    |  |
|----|--|
| 1. | More examples and illustrations  |
| 2. | It will be great if the professor can speak with more emotions and less monotonous |

**Faculty Comments (max 500 chars)**

Characters typed: 0

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Student Feedback on Teaching for Academic Year 2016/2017 Semester 2

Date: 12-MAR-2021 04:28 PM

Instructor: Assoc Prof Ponnuthurai Naga ratnam Suganthan

Course: EE7205 (RESEARCH METHODS)

Method: LEC, Group: A

Actual Class Size: 98

Criteria for consideration	Total Responses	Mean	SD	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
<b>Encouraged engagement in the course</b> 1 As a result of the teaching approaches taken by this faculty member, I was involved and interested in the course.	65	3.92	1.14	24	24	9	4	4
<b>Communicated clearly</b> 2 This faculty member was easy to understand in all forms of communication including in classes, online, and in writing.	65	3.95	1.21	29	17	10	5	4
<b>Was approachable</b> 3 This faculty member created opportunities, either in classes, or outside classes, for students to ask questions and seek help.	65	4.17	1.12	32	23	3	3	4
<b>Helped students understand important concepts</b> 4 This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	65	3.98	1.21	30	17	9	5	4
<b>Encouraged critical thinking in the subject area</b> 5 The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	65	3.86	1.19	26	16	15	4	4
<b>Provided timely feedback that helped my progress</b> 6 This faculty member gave useful comments that assisted students' learning	65	3.92	1.24	29	16	11	4	5
<b>Conducted valuable</b> A The type of class conducted by this faculty member was helpful to my learning.	65	3.92	1.24	29	16	11	4	5
<b>Presented the subject matter in a methodical and logical way</b> I The way this faculty member designed and conducted classes helped to build my knowledge and understanding in a systematic way.	65	3.98	1.22	30	18	7	6	4

(Individual)

Mean Teaching Score: 3.97

Do you have any further comments on this faculty member's encouragement of engagement in the course?

Do you have any further comments on this faculty member's ability to communicate clearly?

Do you have any further comments about this faculty member's approachability?

1. Very open to consultations

Do you have any further comments about how this faculty member helped you understand concepts?

Do you have any further comments to make about this faculty member's encouragement of critical thinking?

Do you have any further comments on the type of class conducted by this faculty member?

1. Basically the same content as the textbook given for reference. No added value.

Do you have any further comments on the way this faculty member presented the subject matter in a methodical and logical way?

Please comment on this faculty member's strengths

- |   |
|---|
| 1. Good   |
| 2. He's kind and patient, willing to help answer your any question. |
| 3. His explanations were clear and understandable                   |
| 4. Professor is indicated.  |
| 5. null   |
| 6. NIL  |

7.	Very open to consultations and the pace of the lectures was just right.
8.	Sometimes I cannot understand the pronunciation.
9.	Clear communication, detail explanation
10.	good at explaining questions
11.	He was approachable for any queries on the subject matter and promptly responded.
12.	Clear explanations
13.	Can't really think of anything
14.	Simply explain statistical equations and how they were formulated
15.	This course is a waste of time and unnecessary for most PhD students. Consider replacing it
16.	Good slides

Please comment on how the faculty member might improve the teaching and learning in this course.

1.	need many background from other subject, always unfair
2.	I think that Grading a presentation about research is not fair. Person who is in second semester can present their research. But, for first semester student, it is hard thing. I think more quiz about subject is more fair.
3.	-
4.	pronunciation
5.	Maybe more application driven, or examples to illustrate the concept
6.	Content can be more problem based
7.	providing more examples
8.	Build a course tailored to answer students needs and which complete the existing resources.
9.	It would be good if the students are allowed to work on some in class examples.
10.	A more interactive class will be helpful to engage students and it'll help to teach at a higher level. Thanks
11.	May arrange the slides better
12.	Simply wasting time...
13.	In every areas
14.	More real case scenarios and focus on the analysis meaning. His expectations for the presentation, one of the continuous assessments, should be more clearer. Exams should contain full formulas, sometimes the required formula is missing, so memorizing the formulas is still necessary. The exam could have more theoretical questions based on the analysis of the results, instead of hand computation of the statistical values.

On average, I rate the difficulty of the content taught by this faculty member as compared to the rest of the courses I have taken, as

much more difficult	8
slightly more difficult	25
same	26
slightly easier	6
much easier	0

I attended:

80% or more of the classes taught by this faculty member	48
Somewhat less than 80% of the classes taught by this faculty member	8
Less than 50% of the classes taught by this faculty member	8

I watched recordings of the lectures:

80% or more of the recordings by this faculty member	35
Somewhat less than 80% of the recordings by this faculty member	14
Less than 50% of the recordings by this faculty member	16

Faculty Comments (max 500 chars)

Characters typed: