CURRICULUM VITAE

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DATE OF BIRTH: December 8, 1954

MARITAL STATUS: Married with one daughter

NATIONALITY: Indian

Professional Experience

Professor Emeritus: Agricultural and Food Engineering Department
Indian Institute of Technology Kharagpur
July 1, 2020 - Present

Professor (HAG): Agricultural and Food Engineering Department
Indian Institute of Technology Kharagpur
August 18, 2019 – June 30, 2020

Professor: Agricultural and Food Engineering Department
Indian Institute of Technology Kharagpur
August 9, 2004 – August 17, 2019

Associate Professor: Agricultural and Food Engineering Department
Indian Institute of Technology Kharagpur
February 13, 1998 – August 8, 2004

Assistant Professor: Agricultural and Food Engineering Department
Indian Institute of Technology Kharagpur
December 20, 1985 – February 12, 1998

Lecturer: Food Science and Nutrition Department
California Polytechnic State University,
San Luis Obispo, CA, USA
September 1, 1983 – December 15, 1985

Educational qualification

Doctor of Philosophy (1982): Pennsylvania State University,
University Park, PA, USA
Specialization - Food Engineering
CGPA – 3.61

Master of Science (1978): Rutgers – The State University of New Jersey
New Brunswick, NJ, USA
Specialization – Agricultural and Biological Engineering
CGPA – 3.48

Bachelor of Technology
(Honours) (1976): Indian Institute of Technology Kharagpur, India
Specialization – Agricultural Engineering
Marks – 79%; Rank – Ist Class First

List of Publications

1. Modelling the extraction process parameters of amorphous silica – rich rice husk ash using hybrid RSM – BPANN – MOGA optimization technique, 2023, P. P. Nayak, S. Nandi, K. Bhunia and A. K. Datta, Materials Chemistry and Physics, 293:126944 – **IF: 4.778**
2. *An entropy based TOPSIS approach for selecting best suitable rice husk for potential energy applications: pyrolysis kinetics and characterization of rice husk and rice husk ash, 2022, P. P. Nayak and A. K. Datta, doi.org/10.1007/s13399-022-02824-3 – **IF: 4.987**
3. *Eggshell crack detection using deep convolutional neural networks, 2022, Bhavya, B, S. S. R. Gattam and A. K. Datta, doi:10.1016/j.jfoodengg.20321.110798 – **IF: 5.354**
4. *Inverse problems in food engineering: A Review, 2022, Reddy, R. S., D. Arepally and A. K. Datta, doi.org/10.1016/j.jfoodengg.2021.110909 – **IF:5.354**
5. *Improving black tea quality through optimization of withering conditions using artificial neural network and genetic algorithm, 2021, Shrilekha Das, Tanmay Samanta and A. K. Datta, doi. org/10.1111/jfpp.15273 – **IF:2.190**
6. *Synthesis of SiO_2-Nanoparticles from rice husk ash and its comparison with commercial amorphous silica through material characterization, 2020, P.P.Nayak and A. K. Datta, doi. 10.1007/s12633-020-00509-y – **IF:2.670**
7. *Estimation of heat flux in bread baking by inverse problem, 2019, R. S. Reddy, D. Arepally and A. K. Datta, doi.org/10.1016/j.jfoodeng.2019.109774, *Journal of Food Engineering* – **IF: 3.625**
8. *Analysis and modeling of major polyphenols during oxidation in production of black tea, 2019, Shrilekha Das, T. Samanta and A. K. Datta, doi.org/10.1111/jfpp.14283, *Journal of Food Processing and Preservation* – **IF:1.288**
9. *Optimization study for refractance window drying process of langra variety mango, 2019, Deepika Shende, Manpreet Kour and A. K. Datta, doi: 10.1007/s13197-019-04101-0, *Journal of Food Science and Technology* – **IF:1.850**
10. *Comparative assessment of chemical treatments on extraction potential of commercial grade silica from rice husk, 2019, P.P. Nayak, S. Nandi and A. K. Datta, *Engineering Reports, 10.1002/eng.2.12035, 1(1),* 1 – 13 (Open access)
11. *Development of super atmospheric oxidation chamber for orthodox tea processing and its validation through neural network approach, 2019, B. K. Panda. A. N. Chavan and A. K. Datta, *Journal of the Science of Food and Agriculture,* 99(8):3752-376, - IF:2.379
12. *Refractance window drying of fruits and vegetables: A Review, 2019, Deepika Shende and A. K. Datta, *Journal of the Science of Food and Agriculture,* DOI:: 10.1002/jsfa.9356**,** 99 (4):1449-1456 - IF:2.379
13. *Mass transfer coefficient and mass diffusivity of O_2 and CO_2during oxidation of macerated CTC and rolled orthodox leaves in black tea manufacturing, 2018, Shrilekha Das and A. K. Datta, *Journal of Food Process Engineering,* DOI: 10.1111/jfpe.12875 **- IF:1.955**

14. *Orthodox tea (Camellia sinensis L.) oxidation under the influence of compressed air: process optimization, 2018, Brajesh Kumar Panda, Gayatri Mishra and A.K.Datta, *Journal of Food Processing and Preservation*, DOI10.1111/jfpp.1357- **IF: 0.89**

15. *Mango pulp drying by refractance window method, 2017. Gurveer Kaur, Khushbu Kumari, Swarnendu Saha and A. K. Datta, Agricultural Engineering International: CIGR Journal, 19(4): 145 – 151 **-IF: 0.48**

16. *Non-Newtonian flow modeling based design of plate heat exchangers, 2017, Abhishek Joshi and A. K. Datta, *Agricultural Engineering International: CIGR Journal*, 19(1):195-204. **- IF: 0.48**

17. *Computational fluid dynamics (CFD) modeling of grain – Water Suspensions in Tube, 2016, Kanishka Bhunia, Ranjeet Kumar Sharma and A. K. Datta, *Agricultural Engineering International: CIGR Journal*,18 (1): 269 – 283 - **IF: 0.48**

18. *Quantitative analysis of major phytochemicals in orthodox tea *(Camellia sinensis)*, oxidized under compressed air environment, 2016, Brajesh Kumar Panda and A. K. Datta, *Journal of Food Science*, 81(4): C858-C866 - **IF:1.92**

19. *Estimation of thermal properties and heat transfer study during continuous processing of rice in milk, 2015, Swati Kadam and A. K. Datta, *Chemical Engineering Communications*, 202:345-355. DOI: 10.1080/00986445.2013.838161 **- IF:1.28**

20. *Estimation of drying rate constant from static bed moisture profile by neural network inversion, 2014, M. K. Hazarika and A. K. Datta, *Agricultural Engineering International: CIGR Journal*, 16(1):253-264. Available at http://www.cigrjournal.org **- IF: 0.48**

21. Effects of novel vacuum drying on orthodox and CTC tea processing, 2014, Anand Kishore, Himadri Shekhar Konar and A. K. Datta, *International Journal of Tea Science*, 10(3 & 4): 78 – 88.

22. *Quality improvement of orthodox and CTC tea and performance enhancement by hybrid hot air – radio frequency (RF) dryer, 2013, A. Shinde, S. Das, and A.K. Datta, *Journal of Food Engineering*, 116:444-449. DOI information:10.1016/j.jfoodeng.2012.12.001 **- IF:3.71**

23. *Optimization of process parameters for continuous kheer – making machine, 2013, S. Kadam, T. Gulati, and A. K. Datta, *LWT – Food Science and Technology*, 51:94-103, DOI information :http:// doi.org/10.1016/j.lwt.2012.10.002 **- IF:3.31**

24. *Two dimensional CFD modeling and simulation of crustless bread baking process, 2010, A. Mondal and A. K. Datta, *Journal of Food Engineering*, 99(2):166-174. **- IF:3.71**

25. *Investigation of the process parameters using response surface methodology on the quality of crustless bread baked in a water spraying oven, 2009. A. Mondal and A. K. Datta, *Journal of Food Process Engineering*, 34(6): 1819-1837. **- IF:1.15**

26. *Bread baking – A Review, 2008, A. Mondal and A. K. Datta, *Journal of Food Engineering*, 86(4):465-474. **- IF:3.71**

27. Preservation of liquid milk using emerging technologies, 2007, M. I. A. Ansari and A. K. Datta, *Indian Dairyman*, 59(11): 59-65.
28. Packaging of liquid milk for shelf life extension, 2007, M. I. A. Ansari and A. K. Datta, *Indian Dairyman*, 59(8): 49-55.
29. An overview of physical sterilants used in aseptic packaging systems, 2007, M. I. A. Ansari, N. Mishra, P. K. Sahoo and A. K. Datta, *Indian Dairyman*, 59(1):37-43.
30. Performance evaluation of air sterilizer, 2006, M. I. A. Ansari and A. K. Datta, *Journal of Agricultural Engineering*, 43(3): 111-113.
31. *Comparative study of heat induced fouling of various types of milk flowing over a heated metal surface, 2006, P. K. Nema and A. K. Datta, *International Journal of Food Engineering*, 2(3):Article 9. Available at http://www.bepress.com/ijfe/vol2/iss3/art9/.- **IF:0.73**
32. *Improved milk fouling simulation in a helical triple tube heat exchanger, 2006, P. K. Nema and A. K. Datta, *International Journal of Heat and Mass Transfer*, 49(19-20):3360-3370. - **IF:3.75**
33. Microbiological testing of aseptic processing and packaging system, 2006, Md. I. A. Ansari, Niharika Mishra and A. K. Datta, *Indian Dairyman*, 58(4):33-38.
34. Helical triple tube ultra-high-temperature (UHT) milk sterilizer: A right choice for rural dairy co-operatives, 2006, M. I. A. Ansari, P. K. Sahoo and A.K. Datta, *Beverage and Food World*, 33(3): 54-57.
35. Application of thermal and physical sterilants in aseptic packaging systems, 2006, M. I. A. Ansari, Niharika Mishra and A. K. Datta, *Beverage and Food World*, 33(1): 73-76.
36. *Manufacture of shrikhand from ultrafiltered skim milk retentates, 2006, M.I.Ansari, P. Rai, P. K. Sahoo and A. K. Datta, *Journal of Food Science and Technology*, 43(1): 49-52. - **IF:1.89**
37. Fouling of heat exchangers in dairy industry: An overview, 2006, M. I. A. Ansari, P. K. Sahoo and A. K. Datta, *Indian Dairyman*, 58(1): 41-47.
38. *A computer based solution to check the drop in milk outlet temperature due to fouling in a tubular heat exchanger, 2005, P. K. Nema and A. K. Datta, *Journal of Food Engineering*, 71(2):133-142. - **IF:3.71**
39. *Milk fouling simulation in helical triple tube heat exchanger, 2005, P. K. Sahoo, I. A. Ansari and A. K. Datta, *Journal of Food Engineering*, 69(2):235-244. - **IF:3.71**
40. Effects of storage period at ambient condition on organoleptic and microbial quality of ultra-high-temperature (UHT) processed milk, 2005, Md. I. A. Ansari, A. P. Yadav, P. K. Sahoo and A. K. Datta, *Beverage and Food World*, 32(8):77, 78.
41. Food preservation using high intensity pulsed electric field, 2005, Md. I. A. Ansari and A. K. Datta, *Beverage and Food World*, 32(3):35-38.
42. Effects of storage period at ambient condition on organoleptic and microbiological quality of ultra-high-temperature (UHT) processed milk, 2005, M. I. A. Ansari, A. P. Yadav, P. K. Sahoo and A. K. Datta, *Beverage and Food World*, 32(8): 76-77.

43. Food preservation by non-thermal technologies, 2005, M. I. A. Ansari, P. K. Sahoo and A. K. Datta, *Indian Food Industry*, 24(2): 61-64.
44. Aseptic processing and packaging: An overview, 2004, Md. I. A. Ansari, P. K. Sahoo and A. K. Datta, *Beverage and Food World*, 31(10):23-25.
45. Application of antimicrobial packaging in food industry, 2004, Md. I. A. Ansari, S. Kumar and A. K. Datta, *Beverage and Food World*, 31(10):53-56.
46. Traditional methods of food preservation, 2004, Md. I. A. Ansari, A. K. Jha and A. K. Datta, *Beverage and Food World*, 31(10):77-80.
47. Use of antimicrobials in food preservation, 2004, Md. I. A. Ansari, A. K. Jha and A. K. Datta, *Beverage and Food World*, 31(7):27-33.
48. *Infra red drying and hot air drying of potato: A theoretical consideration, 2004, P. K. Nema and A. K. Datta, *Journal of Food Science and Technology*, 40(5):580-584. **- IF:1.89**
49. Aseptic processing and packaging: A technology for future generation, 2004, Md. I. A. Ansari, A. K. Datta and P. Rai, *Indian Dairyman*, 56(7):59-63.
50. Role of hydrogen peroxide in aseptic packaging system, 2004, Md. I. A. Ansari and A. K. Datta, *Indian Dairyman*, 56(5):63-66.
51. Role of chemical sterilants in aseptic packaging systems, 2004, M. I. A. Ansari, Niharika Mishra and A. K. Datta, *Indian Food Industry*, 23(5): 47-51.
52. Light pulses technology for food preservation, 2004, *Indian Food Industry*, 23(4): 12-15.
53. *Drying kinetics of garlic cloves under convective drying conditions, 2003, G. P. Sharma, Suresh Prasad and A. K. Datta, *Journal of Food Science and Technology*, 40(1):45-51 - **IF:1.89**
54. *An overview of sterilization methods for packaging materials used in aseptic packaging systems, 2003, Md. I. A. Ansari and A. K. Datta, *Food* and Bioproducts Processing, 81(1): 57-65 – **IF: 4.320**
55. *A computer based iterative solution for accurate estimation of heat transfer coefficients in a helical tube heat exchanger, 2003, P. K. Sahoo, M. I. Ansari and A. K. Datta, *Journal of Food Engineering*, 58(3):211-214. **- IF:3.71**
56. *Milk fouling simulation in a double tube heat exchanger, 2003, Md. I. A. Ansari, Manav Sharma and A. K. Datta, *International Communications in Heat and Mass Transfer*, 30(5):707-716 – **IF: 5.683**
57. *Development and validation of heat and mass transfer models for freeze-drying of vegetable slices, 2002, J. P. George and A. K. Datta, *Journal of Food Engineering*, 52(1):89-93. **- IF:3.71**
58. Color variation of ultra-high-temperature (UHT) processed milk using CIE L, a, b color scale, 2002, P. K. Sahoo, M. I. Ansari and A. K. Datta, *Indian Journal of Dairy Science*, 55(4):234-241.
59. *Computer aided design and performance evaluation of an indirect type helical tube ultra high temperature (UHT) milk sterilizer, 2002, P. K. Sahoo, M. I. Ansari and A. K. Datta, *Journal of Food Engineering*, 51(1):13-19. **IF:3.71**
60. *Determination of specific heat and thermal conductivity of mushrooms (Pleurotus florida), 1999, Mukesh Shrivastava and A. K. Datta, *Journal of Food Engineering*, 39(3):255-260. **- IF:3.71**

61. *Heat transfer coefficient in laminar flow of non-Newtonian fluids in tubes, 1999, A. K. Datta, *Journal of Food Engineering*, 39(3):285-287. **IF:3.71**
62. *Design and testing of a small scale indirect type ultra high temperature (UHT) milk sterilizer, 1995, Ch. V. V. Satyanarayana, A. K. Datta and B. P. Mishra, *Journal of Food Engineering*, 26(3):279- 287. **: IF:3.71**
63. Fluidized bed finish drying of mango powder, 1994, R. Gunasekaran and A. K. Datta, *The Harvester*, 24:12-16.
64. *Prevention of moisture migration in fondant coated biscuits, 1994, G. Balasubrahmanyam and A. K. Datta, *Journal of Food Engineering*, 21(2):235-244. **- IF:3.71**
65. *Thermophysical properties of concentrated reconstituted milk during processing, 1994, Ch. S. Reddy and A. K. Datta, *Journal of Food Engineering*, 21(1):31-40. **- IF:3.71**
66. Ultra high temperature sterilization of milk in India, 1992, A. K. Datta, *Indian Food Industry*, 11(2):36-39.
67. *Thermal properties of frozen peas, clams and ice cream, 1985, A. K. Datta and S. K. Sastry, *Canadian Institute of Food Science and Technology Journal*, 16(3):79-84 – **IF: 6.475**
68. *Constitutive relationship of apple cortex under hydrostatic stress, 1984, A. K. Datta and C. T. Morrow, *Journal of Food Science*, 49(2):623-626 – **IF:1.815**
69. *Graphical and computational analysis of creep curves, 1983, A. K. Datta and C. T. Morrow, *Transactions of the ASAE*, 26(6):1870-1874 – **IF: 1.188**

*Indexed in Scopus/Science Citation Index (44)

List of Conference Papers

1. Thin layer refractance – window (RW) drying kinetics of jackfruit pulp for making intermediate moisture fruit leather, 2017, Manpreet Kour, S. L. Shrivastava and A. K. Datta, 9th Asia Pacific Drying Conference, Wuxi, China.
2. Drying characteristics of mango pulp using refractance window technique, 2016, Gurveer Kaur and A. K. Datta, ETAE 2016: Emerging technologies in agricultural and food engineering, IIT Kharagpur, India.
3. Process parameters optimization for continuous kheer making machine, 2016, Gopal Kumar, Kaushal Singh Bisht and A. K. Datta, ETAE 2016: Emerging technologies in agricultural and food engineering, IIT Kharagpur, India
4. Effects of thickness of mango puree on refractance window drying, 2016, Deepika Shende, Awani Shrivastav and A. K. Datta, ETAE 2016: Emerging technologies in agricultural and food engineering, IIT Kharagpur, India
5. Computational heat transfer modeling of rice-water suspension in tube, 2012, Kanishka Bhunia and A. K. Datta, CHT – 12: International symposium on Advances in computational Heat Transfer, Bath, UK.
6. Optimized design of heat pump assisted dryer for perishables, 2010, V. Aravind, K. S. Karthik and A. K. Datta, ASME-ATI-UIT Conference on Thermal and Environmental Issues in Energy Systems, Sorrento, Italy.
7. Modeling of deep fat frying of batter coated potato cake, 2009, S. Bafna, T. Gulati and A. K. Datta, International Conference on Food Security and Environmental Sustainability, IIT Kharagpur.
8. Prediction of fouling thickness and temperatures by artificial neural network (ANN) modeling in helical triple tube milk sterilizers, 2009, A. Chaturvedi, S. Acharya and A. K. Datta, Heat Exchanger Fouling and Cleaning Conference – 2009, Schladming, Austria (available online at www.heatexchanger-fouling.com/).
9. Milk sterilization and aseptic packaging under rural context, 2009, A. K. Datta, XXXVII Dairy Industry Conference, Panjim, Goa.
10. Aseptic packaging of sterilized milk under rural context, 2008, A. K. Datta, National Seminar on Dairy Engineering, Raipur, Chhattisgarh.
11. Simulation of fouling behaviour in a helical triple tube ultra-high-temperature milk sterilizer, 2006, P. K. Sahoo, P. K. Nema and A. K. Datta, International Conference on Fouling, Cleaning and Disinfection in Food Processing, Jesus

College, Cambridge, UK.

12. Neural network architecture for determination of moisture diffusivity from drying data by slope method, 2005, M. K. Hazarika and A. K. Datta, 4th Asia Pacific Drying Conference, Kolkata.
13. Dynamic neural network based simulation of static bed drying of barley, 2004, M. K. Hazarika and A. K. Datta, International Workshop and Symposium on Industrial Drying, Mumbai.
14. Prediction of freezing time of cooked potato cube by simplified analytical model, 2002, S. Kalaskar, P. K. Chattopadhyay and A. K. Datta, 36th National Convention of ISAE, IIT Kharagpur, West Bengal.
15. Milk fouling simulation in triple tube heat exchanger, 2004, P. K. Nema, P. K. Sahoo and A. K. Datta, International conference on Emerging Technologies in Agricultural and Food Engineering, IIT Kharagpur, West Bengal.
16. An overview of fouling in indirect heat exchanger, 2004, Md. I. A. Ansari, A. K. Jha, P. K. Sahoo and A. K. Datta, International conference on emerging Technologies in Agricultural and Food Engineering, IIT Kharagpur, West Bengal.
17. Prediction of freezing time of cooked potato cube by simplified analytical model, 2002, S. Kalaskar, P. K. chattopadhyay and A. K. Datta, 36th National convention of ISAE, IIT Khargpur, West Bengal.
18. Milk fouling simulation in triple tube heat exchanger, 2001, P. K. Nema and A.K.Datta, 15th National Convention of Agricultural Engineers, Jabalpur, M.P.
19. Milk fouling simulation in tubular heat exchanger, 1999, Rakesh Ranjan and K. Datta, National Conference on Fluid Mechanics and Fluid Power, IITKharagpur.
20. Heat transfer coefficient in laminar flow of non-Newtonian fluids in tubes, 1996, A. K. Datta, National conference of Post Harvest Preservation and Processing of Fruits and Vegetables, IIT Kharagpur.
21. Computer aided design of an indirect type UHT heat exchanger, 1995, Ch. V. V. Satyanarayana and A. K. Datta, Annual convention of Indian Society of Agricultural Engineers, CIAE Bhopal.
22. Fluidized bed drying of mango powder, 1993, R. Gunasekaran and A. K. Datta, International Food Convention, CFTRI, Mysore.
23. Heat transfer in horizontal steam heated scraped surface heat exchanger, 1992, D. R. Patil and A. K. Datta, International Agricultural Engineer's conference, Bangkok, Thailand.
24. Design and development of an inclined scraped surface heat exchanger, 1991, Ch. S. Reddy and A. K. Datta, National Conference of Agricultural Engineers, Bhubaneshwar, Orissa.
25. Spray Drying of Bael (Aegle marmelos), 1990, K. S. Avadhani and A. K. Datta, National conference on Processed Food in rural Economy and Nutrition, Jadavpur University, Calcutta.
26. Design of ultra high temperature (UHT) sterilizer for milk, 1988, B. P. Mishra and A. K. Datta, International Food convention, CFTRI, Mysore.
27. Freezing rate prediction: an enthalpy based solution, 1983, A. K. Datta and S. K. Sastry, Regional Meeting of the ASAE, Delaware, USA.

28. Creep behaviour of apple tissue under hydrostatic stress, 1982, A. K. Datta and C. T. Morrow, Summer Meeting of the ASAE, Madison, Wisconsin, USA.
29. Analysis of creep curves, 1981, A. K. Datta and C. T. Morrow, Winter Meeting of the ASAE, Chicago, Illinois, USA.

List of Books

1. Transport phenomena in food process engineering, 2001, Himalaya Publishing House, Mumbai, India.
2. Food process and preservation engineering, 1992, DTP Press, IIT Kharagpur, India.

Ph. D. Project Guidance

1. Study of radio frequency drying of CTC, orthodox and green tea, 2022, Ashutosh Chavan
2. Development of refractance window drying protocol for production of intermediate moisture mango leather, 2021, Deepika Shende Channe
3. Vacuum drying of orthodox and CTC black tea, 2019, Himadri Shekhar Konar
4. Development of a suitable environment control chamber to study the effects of air conditions on physicochemical changes during withering and oxidation of tea, 2018, Shrilekha Das
5. Optimized process parameters based heat and mass transfer guided design and performance simulation of a continuous kheer (rice pudding) making machine, 2013, Swati Appasaheb Kadam.
6. Neural network modeling for estimation of moisture diffusivity in drying of potato and barley, 2011, Manuj Kumar Hazarika.
7. Development of process technology for baking of crustless bread, 2009, Arpita Mondal.
8. Modeling and simulation of fouling in helical triple tube ultra high temperature (UHT) milk sterilizer, 2009, Prabhat Kumar Nema.
9. Development of aseptic packaging system for sterilized milk, 2005, Md. Irfan Ahmed Ansari.
10. Utilization of chhana whey for the production of energy drink and ethanol, 2002, Prasun Maiti.
11. Computer aided development and performance evaluation of a helical triple tube ultra-high-temperature (UHT) milk sterilizer, 2001, Pradeepta Kumar Sahoo.
12. Studies on mushroom dehydration (Pleurotus florida), 1999, Mukesh Shrivastava.
13. Design evaluation and performance improvement of a triple tube heat exchanger for UHT milk processing, 1996, Bishnu Prasad Mishra.

Execution of National Level Projects at IIT Kharagpur

Project Title	Principal Investigator/ Co-PI	Commencement/ Completion Dates	Total Sanction (Lakh Rupees)
Studies on indirect Type ultra high temperature (UHT) sterilizer for milk	Dr. A. K. Datta (PI)	1-1-2000/31-12-2002	5.951 (ICAR)

Studies on electronic Control of milk sterilization In an indirect type ultra-high-temperature (UHT) Milk sterilizer	Dr. A. K. Datta (PI)	1-6-2002/30-11-2004	8.925 (ICAR)
Standardisation of Process parameters In withering, maceration, rolling, Fermentation and drying of tea	Dr. B. C. Ghosh (PI)/ Dr. A. K. Datta (CO-PI)	1-1-2009/31-3-2013	250.0 (Tea Board)
Harvest and post Harvest technology	Dr. A. K. Datta (PI)	1-11-2009/continuing	500.0 (ICAR)
Assessment of harvest And post harvest losses of crops And commodities of India	Dr. A. K. Datta (PI)	1-9-2012/31-8-2014	6.4 (ICAR)
Development of a Prototype for continuous Production of kheer	Dr. A. K. Datta (PI)	1-11-2012/31-10-2013	6.25 (NDDB)
Study on determining Storage losses in food grains In FCI and CWC warehouses And to recommend norms for Storage in efficient Warehouse management	Dr. A. K. Datta (PI)	1-4-2015/30-9-2017	12.37 (ICAR)

M. Tech. Project Guidance

1. Design and development of solar parabolic collector for effective pasteurization of milk, 2019, Shyam Kumar Singh
2. Design and control of robotic arm to sort eggs detected with micro cracks, 2019, Kingshuk Ghosh
3. Vacuum frying of gulabjamun, 2019, Thota Niranjan
4. Yield evaluation and quality analyses of paneer prepared from combinations of cow milk and buffalo milk, 2018, Bibek Bahadur Shreshtha
5. Studies on vacuum frying of green banana (Musa paradisicia) Chips, 2018, Suman Kumar Paul
6. Development of solar pasteurizer, 2018, Ronit Mondal
7. Design of vapour absorption refrigeration system, 2017, Nikhil Pawar
8. Rheo-viscometric study of curds, 2017, Rahul Sahu
9. Extraction of silicon compounds from rice husk ash, 2017, Roshan Kumar
10. Microbial safety assessment of continually produced kheer, 2016, Sumit Biswas
11. Refractance window drying of mango pulp in layers, 2016, Awani Shrivastav
12. Commissioning and performance evaluation of the kheer making machine with

scraped surface evaporator, 2016, Gopal Kumar
13. Refractance window drying of mango pulp, 2015, Gurveer Kaur
14. Non-Nwewtonian flow modeling based design of plate type heat exchanger, 2015, Abhishek Rajendra Joshi
15. Microbial safety assessment of continually produced kheer (rice pudding), 2015, Sumit Biswas
16. Effect of pressure on oxidation time and quality attributes of orthodox tea, 2014, Brajesh Kumar Panda.
17. Refractance window drying, 2014, Swarnendu Saha.
18. Performance evaluation of continuous kheer making machine, 2014, Kaushal Singh Bisht.
19. CFD Modeling of continuous processing of kheer inside the helical pipe, 2013, Arvind Choudhary.
20. Development of refractance window drying for the preparation of mango leather, 2013, Khushbu Kumari.
21. Vacuum and air-recirculatory endless chain pressure drying of leaves, 2013, Anand Kishore.
22. Computational fluid dynamics modeling of spray drying of milk, 2012, Sachin Pathak.
23. Determination of residence time and particulate heat transfer coefficient of granular solid-liquid suspension, 2012, Ranjeet Kumar.
24. Mathematical modeling of radio frequency drying of tea leaves, 2012, Anugnya Shinde
25. Estimation of fluid-to-particle film heat transfer coefficient of rice and cassava suspension under continuous tube flow, 2011, Kanishka Bhunia.
26. Mathematical modeling of heat and mass transfer of radio-frequency (RF) drying of tea leaves, 2011, Sanchita Biswas.
27. Study of reverse osmosis membrane filtrations for concentration of solutes in various types of milk, 2011, Rahul Shah.
28. Vacuum drying of orthodox and CTC tea, 2010, Sovan Mahanayak.
29. Simulation and modeling of energy utilization in customized oven, 2010, Kanakabandi Charithkumar.
30. Optimization of combined drying processes for foodstuffs and assessment of diffusional behavior of water, 2009, Subhasis Deb.
31. Development of optimized operating parameters and modeling of bread baking, 2009, Rajender Gundu.
32. Simulation and artificial neural network (ANN) modeling of drying characteristics of selected agricultural produce, 2009, Kingshuk Dhali.
33. Optimization of process parameters for storage stability of aseptically packed fruit juice, 2008, Sachin Shivaji Ghorpade.
34. Optimization of process parameters for effective rolling operation of tea leaves, 2008, Saumya Ranjan Swain.
35. Prediction of fouling thickness and temperatures in various helical triple tube milk sterilizers, 2008, Suvendu Acharya.
36. Optimization of process parameters for design of heat pump assisted dryer for vegetables, 2007, Vikas Kumar.

37. Simulation of thermal energy transfer in non Newtonian liquids in heat exchangers, 2007, Ravi Shankar.
38. Study of heat transfer characteristics of non Newtonian liquid, 2006, Rahul Singh.
39. Measurement of thermophysical properties of non Newtonian fluids, 2006, Amar Kumar.
40. Artificial neural network modeling of milk fouling in helical triple tube heat exchanger, 2006, Kumar Ashish
41. Study and modification of aseptic packaging machine for milk, 2005, Abhijit Prahlad Yadav.
42. Heat transfer studies on a double tube heat exchanger designed for heating of non-Newtonian liquids, 2005, Lalit Mohan Bal.
43. Milk fouling and bulk milk temperature simulation in helical triple tube heat exchanger, 2004, Ravi Kant Srivastava.
44. Design and development of a semiautomatic aseptic packaging machine for sterilized milk, 2003, Niharika Mishra.
45. Finite element analysis of bread baking, 2002, Shawvik Das.
46. Finite element analysis of bread baking using ALGOR, 2001, Sudhindra Shukla.
47. Heat transfer to non-Newtonian liquids, 2001, Anindita Majumdar.
48. Performance evaluation of helical triple tube UHT milk sterilizer, 2000, M. Ansari.
49. Freeze drying of vegetables, 2000, J. P. George.
50. Computer simulated design of helical triple tube UHT milk sterilizer, 1999, E. Raghupathy.
51. Modernization in ghee manufacturing process, 1999, M. L. Deshpande.
52. Optimization of operational parameters in spray drying of milk, 1999, B. S. Chauhan.
53. Studies on the dehydration of capsicum (Capsicum annuum), 1998, Rajnish.
54. Energy consumption in a commercial dairy plant, 1997, K. H. Gedam.
55. Milk fouling simulation in tubular heat exchangers, 1997, P. K. Sahoo.
56. Development and testing of a fouling simulator for the UHT processing of milk, 1996, M. Patidar.
57. Performance evaluation of continuous stirred tank reactor (CSTR) and trickle filter for treatment of dairy wastewater, 1995, A. Alaguvel.
58. Design and development of a fouling simulator for the UHT processing of milk, 1995, M. Rahman.
59. Optimization of operational parameters in spray drying of milk, 1994, N. Dwivedi.
60. Performance evaluation of an inclined scraped surface heat exchanger, 1994, M. K. Saxena.
61. Design of a fluidized bed dryer for food powders, 1993, R. Gunasekaran.
62. Modeling of solubility and mass transfer in supercritical carbon dioxide, 1993, Atul Pitambar Rane.
63. Performance evaluation of an inclined scraped surface heat exchanger for continuous khoa making, 1993, P. Karuppuchamy.

70. Measurement of thermophysical properties of concentrated milk for design of a scraped surface heat exchanger, 1992, Ch. S. Reddy.
71. Supercritical fluid extraction of spice oils using carbon dioxide, 1992, V. Mohanraj.
72. Modification and testing of continuous khoa making and peda forming machines, 1991, M. S. Behl.
73. Study of moisture migration in fondant coated biscuits, 1991, G. Balasubrahmanyam.
74. Design, development and performance testing of an indirect type UHT sterilizer, 1990, Ch. V. V. Satyanarayana.
75. Spray drying behaviour of gum acacia encapsulated coffee aroma, 1990, K. K. Chandrakar.
76. Use of ultrafiltration for shrikhand manufacture, 1990, P. T. Desai.
77. Design and fabrication of a batch type aroma recovery unit, 1989, S. Kanagasabapathy.
78. Performance testing of small-scale spray dryer with milk, 1989, S. Umare.
79. Study of physical and thermal properties of milk during in can sterilization, 1989, P. Shinde.
80. Design and fabrication of a triple tube ultra high temperature milk sterilizer, 1988, B. P. Sawant.
81. Design and fabrication of a table model spray dryer, 1988, S. Joseph.
82. Determination of enthalpy and specific heat of frozen meat, 1987, V. K. Gorde.
83. Design, fabrication and testing of a scraped surface heat exchanger, 1987, D. R. Patil.

Dual Degree Project Guidance

1. Physicochemical analysis of curd powder prepared by refractance window drying, 2019, Astha Madhur
2. Development of Python based software for image analysis for detection of cracked eggs 2019, Punit Kumar
3. Design and development of a solar collector milk pasteurizer using solidworks and performance evaluation of the same applying finite element method in abaqus software, 2019, Nikhil Maan
4. One dimensional numerical modeling and simulation of heat and mass transfer during immersion frying as Stefan's problem, 2018, Debmalya Ghosh
5. Application of machine vision in crack detection in eggs, 2018, S. K. Nayak
6. Development of thermoelectricity based induced draft fan for boiler chimney, 2018, Avinash Prakash
7. Modeling and simulation of temperature and sugar concentration of gulab jamun following deep fat frying, 2017, Gairik Biswas
8. Development of algorithm based neuro-fuzzy controller for mechanized production of soan – papri, 2017, Vikas Kumar
9. Artificial neural network (ANN) modeling of the outlet temperature and Biot numbers for helical triple tube heat exchanger, 2017, Andhuvarupu Sunil Kumar

10. Modeling and simulation of temperature and concentration profile of rasgulla while cooking, 2016, K. H. Anand
11. Development of algorithm based neuro-fuzzy controller for mechanized production of soan papri, 2016, Yash Singh Chauhan
12. Modelling and simulation of mass transfer during deep fat frying of batter covered potato cake, 2016, K. Sudheer Kumar
13. Modeling and simulation of temperature profile of rasgulla while cooking, 2015, Yashneeil Singh
14. Application of Nyquist stability criterion to maintain steady outlet temperature for UHT milk sterilizer, 2015, Yeda Usha Sai
15. Computational fluid dynamics analysis of milk chiller, 2015, Ranu Choudhary
16. Development of algorithm based neuro-fuzzy controller for mechanized
17. Production of sweetened Bengal gram flour cake (soan papdi), 2015, Sahil Singh Rathore
18. ANN modeling of the outlet temperature and Biot numbers for helical triple tube heat exchanger, 2014, Rahul Deora.
19. CFD modeling of fluid flow in helical pipe using ANSYS Workbench, 2014, Arpita Maheswari.
20. Development of fuzzy logic control algorithm for finishing soan papri preparation, 2014, Pokala Praveen.
21. Computational analysis of packed distillation column for aroma recovery, 2013, S. Praveen Kumar
22. Development of stable control algorithm to maintain steady outlet temperature for UHT milk sterilizer, 2012, Arundeep Chinta
23. Computational fluid dynamics simulation of an evaporative cooling chamber for natural cooling of fruits and vegetables, 2012, Shashank Varma Kalidindi.
24. Heat transfer during boiling of eggs: computational simulation, 2012, Suman Saurabh.
25. Prediction of fouling thickness and outlet temperature in milk sterilizers using artificial neural network modeling, 2011, Sattwika Saha.
26. Development of control algorithm to maintain steady outlet temperature for milk sterilizer, 2011, Siddhant Mishra.
27. Numerical simulation and modeling of cooking of rice grain, 2010, Tushar Gulati.
28. CFD modeling of spray drying of milk, 2010, Vivek Tejas.
29. Computational fluid dynamics modeling of liquid flow in a scraped surface heat exchanger, 2010, K. S. Karthik.
30. Numerical modeling of heat and mass transfer during deep fat frying of potato cake coated with batter, 2009, Suvrat Bafna.
31. Simulation of crustless bread baking, 2008, Konica Gupta.
32. Study of secondary flow velocity vectors in helically coiled pipes by CFD modeling using FLUENT/GAMBIT, 2008, Kumar Saurav.

B. Tech. (Hons.) Project Guidance

1.Refractance Window drying of yoghurt, 2019, Naveen

2.Vacuum frying of foods, 2019, Hitesh Lakhotia
3. Design of vapour absorption refrigeration system for enhanced capacity, 2018,Ashirwad Khaitan (DD)
4. Application of robotics in egg grading operation, 2018, Kavya Munnuru (DD)
5. Design of a vacuum chamber for the eggshell crack detection, 2018, Astha Pandey (DD)
6. Static and dynamic analysis of whole mango cutter, 2018, Sharanjeet Singh
7. Development of mechanical design of a robot for the production of sweetened Bengal gram flour cake (Soan Papri), 2017, Anem Phani Vinusha (DD)
8. Energy utilization and view factor analyses of an oven, 2017, Prashant Singh (DD)
9. Numerical simulation of heat and mass transfer during vacuum frying of gulab jamun, 2017, Debmalya Ghosh (DD)
10. A machine vision system for identification of micro-cracks in eggs, 2016, Akash Madan Mishra
11. Development of thermoelectricity based induced draft fan for boiler chimney, 2016, Hrishikesh Rava
12. Inverse heat transfer mechanism in a baking oven, 2015, Aaditya Krishnan
13. Alternate direction implicit method for estimation of temperature during baking, 2015, V. Arjunkrishna
14. View factor analysis of an energy saving oven, 2015, Arpit Gupta (DD)
15. Computatinal fluid dynamic analysis of a milk chiller, 2015, Manan Shailendra Mehta (DD)
16. Modelling of non-Newtonian flow through single screw extruder, 2014, D. G. P. Reddy.
17. Development of thermoelectricity based induced draft fan for boiler chimney, 2014, Pranav Gargieya.
18. Design of vapour absorption refrigeration system, 2013, Akash Agarwal.
19. Simulated velocity and thermal profiles of solid and fluid in two phase flow, 2013, Arpita Maheshwari (DD)
20. Performance of steam turbines, 2013, Pokala Praveen (DD)
21. Matheamtical modeling of heat and mass transfer in radio frequency (RF) drying of tea leaves, 2012, M. P. Harshit.
22. Heat and mass transfer during cooking of Bengal Gram: analytical and numerical solutions, 2012, S. Praveen Kumar (DD)
23. Modeling and simulation of temperature profile of sorghum during cooking, 2011, Anubha Garg.
24. Radio-frequency drying of tea leaves, 2011, Anand Prakash.
25. Computational fluid dynamics modeling of liquid flow in a scraped surface heat exchanger, 2011, Shashank Varma Kalidindi (DD)
26. Dynamic fouling model in a double tube heat exchanger, 2010, Sattwika Saha (DD)
27. Computational fluid dynamics modeling for a spray drying system, 2010, Monisha Priya Srivastava (DD)
28. Development of control algorithm for maintenance of steady temperature at the outlet of milk sterilizer, 2010, Siddhant Mishra (DD)

29. Erosion of valve in milk homogenizer, 2010, Monish Salhotra.
30. Computational fluid dynamics modeling of fluid flow in helical pipe using FLUENT and GAMBIT, 2009, Ambalika Smiti.
31. Modeling for transient temperature profiles of frying meat, 2009, Nikhil Agarwal.
32. Optimized design of a heat pump assisted drying system for vegetables, fruits and medicinal herbs, 2009, K. S. Karthik.
33. Study of quality improvement in made black tea due to vacuum drying, 2009, Vivek Tejas (DD)
34. Artificial neural network (ANN) modeling for prediction of effective diffusivity and drying time for biological materials, 2008, Suvrat Bafna (DD)
35. Optimized design of heat pump assisted dryer for fruits and vegetables, 2008, V. Aravind.
36. Software development for determination of regression constants for O_2 and CO_2 gas permeation, 2008, Prabhjot Kaur.
37. Finite element modeling of bread baking, 2007, Rajat Kumar Singh.
38. Artificial neural network modeling for milk fouling during sterilization, 2007, Ashish Chaturvedi.
39. Study of heat transfer characteristics of non Newtonian liquid flow in tubes, 2007, Kumar Saurav (DD)
40. Study of heat transfer characteristics of non Newtonian liquid, 2006, Rohit Gupta.
41. Software development for automatic data acquisition for helical tube heat exchanger, 2004, Jaibeer.
42. Use and application of finite element analysis in bread baking, 2002, D. Jaiswal.
43. Optimization of performance of helical triple tube heat exchanger, 2002, S. Nimaiyar.
44. Application of artificial intelligence in digital image processing, 2001, A. K. S. Jasrotia.
45. Computer aided simulation of milk fouling in tubular heat exchangers, 2000, M. Sharma.
46. Milk fouling simulation in double tube heat exchanger, 1999, R. Ranjan.
47. Design of triple tube spiral heat exchanger for ultra high temperature sterilization of milk, 1998, V. V. V. S. A. Rao.
48. Finite difference analysis of bread baking, 1997, L. Sridhar.
49. Finite element analysis of milk fouling simulator, 1996, H. Grewal.
    Infrared drying of mushrooms, 1996, A. Singh.
50. Use of finite difference analysis (alternate direction implicit scheme) in modeling transient temperature distribution during bread baking, 1995, S. Alavi.
51. Finite element analysis of milk fouling simulator, 1995, A. Kumar.
52. Milk fouling simulation in tubular heat exchangers, 1995, V. Ghosh.
53. Heat transfer modeling of an inclined scraped surface heat exchanger, 1994, S. Mukherjee.
54. Finite element analysis of a milk fouling simulator, 1994, S. K. Puri.

55. Computer aided simulation of a packed bed distillation column for essence recovery, 1993, K. Roy.
56. Study of fouling in indirect type ultra high temperature milk sterilizer, 1992, S. Singh.
57. Comparison of solar and tray drying parameters for grapes, 1992, S. Narayan.
58. Performance study of a twin fluid atomizer for spray drying, 1991, K. P. Sandeep.
59. Modeling of transient temperature distribution during bread baking by finite difference analysis, 1991, N. Balaji.
60. Ultrafiltration in milk processing, 1990, R. R. Vinod.
61. Studies in extraction of soybean oil after pretreatment with viscozyme, 1990, L. Pattabiraman.
62. Modeling of baking, 1988, S. Sharma.
63. Modeling of spray dried wood apple drink, 1988, K. S. Avadhani.
64. Dairy waste treatment using a trickle filter, 1987, G. Subrahmanyam.
65. Pretreatment characterization of dairy waste, 1987, D. Mukhopadhyay.

Patents

A crustless bread baking oven – Indian Patent No. 361933
Continuous RW Dryer – Indian Patent Application No. 202131030701 dated 8/7/21

Office of the Controller General of Patents, Designs & Trade Marks
Department of Industrial Policy & Promotion,
Ministry of Commerce & Industry,
Government of India

(http://ipindia.nic.in/index.htm)

INTELLECTUAL PROPERTY INDIA (http://ipindia.nic.in/index.htm)

Legal Status : Ceased
Date Of Cessation : 18-06-2021

Patent Number	:	361933	Date of Patent	:	18/11/2009
Application Number	:	1369/KOL/2009	Date of Grant	:	18/03/2021
Type of Application	:	ORDINARY APPLICATION	Date of Recordal	:	18/03/2021
Parent Application Number	:	---	Appropriate Office	:	KOLKATA
Grant Title	:	A CRUSTLESS BREAD BAKING OVEN			

Sl No	Name of Grantee	Grantee Address
1	INDIAN INSTITUTE OF TECHNOLOGY	KHARAGPUR-721 302, WEST BENGAL, INDIA

Sl No	Name of Patentee	Address of Patentee
1	INDIAN INSTITUTE OF TECHNOLOGY	KHARAGPUR-721 302, WEST BENGAL, INDIA

Address of Service : S. BANERJEE C/O L. S. DAVAR & CO., 32, RADHA MADHAB DUTTA GARDEN LANE KOLKATA-700010

https://ipindiaservices.gov.in/PatentSearch/PatentSearch/eRegistrationReport 1/3

Awards and Recognitions

2012 – Arundeep Chinta, Best Project Report, Dual Degree.
2011 – Sattwika Saha, Best Project Report, Dual Degree.
2011 - Swati Kadam, Research Scholar, APV Seligman Fellow in Food Engineering, UK.
2010 - Tushar Gulati, Best Project Report, Dual Degree.
2009 - Subhasis Deb, DAAD Sandwich M. Tech. Fellow.
2008 – Konica Gupta, Best Project Report, Dual Degree.
2007 – P. K. Nema, Ex-Research Scholar, APV Seligman Fellow in Food Engineering, UK.
2006 - P. K. Sahoo, Ex-Research Scholar, APV Seligman Fellow in Food Engineering, UK.
2004 - Md. Irfan Ahmed Ansari, Research Scholar, APV Seligman Bursary Awardee in Food Engineering, UK.
2000 - Manav Sharma, B. Tech. (H), received S. P. Sengupta Memorial Award of IIT Kharagpur for the best project report in application of CAD/CAM in heat transfer.
1978 – Research Assistantship, Pennsylvania State University, USA.
1976 - Graduate Assistantship, Rutgers University, USA.
1976 - Institute Silver Medal, IIT Kharagpur.
1971 - National Scholar, Ministry of Human Resource Development, Government of India.

Former Scholars holding responsible positions:

Dr. Prasun Maity – Reader, West Bengal University of Animal Husbandry and Fishery Sciences, Mohanpur, Nadia, West Bengal.
Dr. Mukesh Srivastava – Principal Investigator and Research Engineer, AICRP on PHT, Rajendra Agricultural University, Pusa, Samastipur, Bihar
Dr. Pradeepta Kumar Sahoo – Professor, Bidhan Chandra Krishi Vishwavidyalaya, Mohanpur, Nadia, West Bengal.
Dr. Md. Irfan Ansari – Associate Professor, Birsa Agricultural University, Ranchi
Dr. Prabhat Kumar Nema – Professor, National Institute of Food Technology Entrepreneurship and Management, New Delhi.
Dr. Arpita Mondal – Research Fellow, Sheffield Hallam University, UK
Dr. Manuj Kumar Hazarika – Professor, Department of Food Engineering and Technology, Tezpur University, Assam.

Other Academic Activities

Reviewer of International Journals –

Journal of Food Engineering (Elsevier)
Biosystems Engineering (UK)
International Journal of Agricultural Engineering (USA)
Applied Mathematical Modeling (Elsevier)
Experimental Thermal and Fluid Sciences (Elsevier)
Applied Thermal Engineering (Elsevier)
International Communications in Heat and Mass Transfer (Elsevier)

Organization of Short Term Courses –

1. **Food Process and Preservation Engineering**:
   All India Council for Technical Education **(AICTE) -**
   June 1 - 12, 1990.
2. **Thermal Processing of Foods:**
   International Faculty: Dr. K. P. Sandeep,
   Professor, North Carolina State University, USA
   International Summer/Winter Terms **(ISWT)** -
   June 2 – 13, 2014
3. **Extrusion Processing in the Food and Feed Industries:**
   International Faculty: Dr. Sajid Alavi,
   Professor, Kansas State University, USA
   Global Initiative for Academic Networks **(GIAN)** –
   June 6 – 17, 2016

Editorial Board Member, International Journal of Dairy Technology
Expert Member, Board of Studies
Tezpur University, Assam
NERIST, Arunachal Pradesh
Doctoral Thesis Examiner : BCKV, Mohanpur Nadia, West Bengal

Outlines of Regular Semester Subjects Taught

1. INSTRUMENTATION AND CONTROL IN FOOD INDUSTRY

Introduction – review of Laplace Transforms; zero, first and second order instruments' responses.
Motion and displacement measurement – strain gages, differential transformers, piezoelectric transducers, nozzle flapper.
Pressure measurement – manometer dynamics, Bourdon tubes, pressure and force balance transducers.
Vacuum measurement – Mcleod, Knudsen, thermal conductivity and Pirani gages.
Flow measurement – Pitot static tube, hot wire anemometer, orifice meters, rotameters, turbine flow meters.
Temperature measurement – bimetallic, pressure and resistance thermometers, thermocouples, thermistors and radiation thermometry.
Liquid level and humidity measurement.

Intelligent instrumentation for quality analysis of biochemicals – UV/visible spectrophotometry, IR spectrophotometry, atomic absorption spectrometry, Gas/liquid chromatography, mass spectrometry.
Control theories – proportional, integral and derivative controls; transfer functions, feedback control; transient response, stability criterion, Routh test, root locus, frequency response, Bode plots, controller tuning.
Digital control – Sampling and Z transforms, sampled data control.

2. TRANSFER PROCESSES IN FOOD ENGINEERING

Momentum transfer (fluid mechanics) – equation of continuity; Navier Stokes equation; force balance in pipe flow, Hagen Poiseuille's equation; compressible gas flow, nozzle flow, sonic velocity; porous media flow, Ergun's equation, fluidized bed flow; non-Newtonian liquid flow in pipes and slits, apparent viscosity, generalized coefficient of viscosity, generalized Reynold's number; principle of extrusion modeling.
Heat transfer – conduction in composite systems, log mean temperature difference, tubular heat exchangers, shell and tube cross flow heat exchangers, effectiveness-NTU relationships, conduction-convection systems, extended surface heat exchangers; natural and forced convection; boiling and condensation; transient state heat conduction – analytical and graphical solution for simple geometry; numerical methods in heat transfer – finite difference and finite element methods.
Mass transfer – molecular diffusion and Fick's law, diffusivity, steady state diffusion, equimolar counterdiffusion, diffusion through varying cross sectional area, Knudsen diffusion, mass transfer coefficients, interdependency of mass transfer coefficients, analogy between momentum, heat and mass transfer.

3. DAIRY PROCESS ENGINEERING

Introductory dairy chemistry, functionality of milk constituents.
Cream separation; homogenization, mixing and agitation.
Dairy microbiology, thermal death kinetics, D and Z values, pasteurization, sterilization, aseptic packaging.
Concentration and evaporation – material and energy balance, boiling point elevation, pressure/temperature relationship, Clausius-Clapeyron equation, falling and rising film evaporators, thermocompression.
Spray drying, cyclone separator, instantization.
Butter making, ice cream manufacture, cheese making, indigenous dairy products manufacture.
Dairy plant cleaning and sanitation chemistry and application.
Pollution control and effluent treatment in dairy plant – enzyme kinetics, continuous stirred tank reactor, activated sludge systems, trickle filter.

4. FOOD ENGINEERING LABORATORY

Comminution and particle size analysis; viscometry of Newtonian and non-Newtonian liquids,; pressure/temperature relationships in evaporation of solvent and solution; thin layer drying of vegetables; sterilization of food in cans; heat

transfer and pressure drop calculations in plate heat exchanger; cream separation in disc bowl centrifuge; study of homogenization; study of modern rice mill; design of ultra high temperature (UHT) milk sterilizer; plate freezing of vegetables; heat transfer study of scraped surface heat exchanger/evaporator, rising film evaporator; infrared drying of vegetables; texture analysis of foods; spray drying of milk; freeze drying of vegetables; differential distillation of ethanol/water mixture; PI and PID control of level, flow and temperature.

5. FOOD ENGINEERING OPERATIONS

Principles of food preservation – water activity, sorption and desorption isotherms, BET and GAB equations.

Psychrometry – absolute and relative humidity, humid volume, wet bulb temperature and adiabatic saturation.

Dehydration – drying theories, constant and falling rates of drying, capillary flow and diffusion, bin, tray, drum and spray drying.

Evaporation – Roult's law, boiling point elevation, single and multiple effect evaporators.

Freezing – freezing point depression due to presence of solutes, types of freezers.

Filtration – ultrafiltration and reverse osmosis.

Distillation – equilibrium diagram, design of towers, enthalpy/concentration diagram.

Leaching – equilibrium relation, single and multistage leaching.

6. FOOD PLANT AND EQUIPMENT DESIGN

Steam generation – properties of steam, boiler classification, accessories, heat transfer in fire and water tube boilers, draught, performance analysis, flue gas analysis, water treatment for reduction of hardness.

Water treatment for microbiological safety – chlorination chemistry.

Plant sanitation – chemistry of detergents, optimization of detergents use, CIP cleaning, cleaning cycles for various processes.

Waste water treatment – biochemistry of decomposition, BOD, COD, aerobic and anaerobic decomposition, biochemical reaction kinetics, design of continuous stirred tank reactors, activated sludge systems, trickle filter.

7. FOOD PROCESS MODELING

Tools in mathematical modeling – Student's t-test, Chi-square test, Anderson-Darling test, Analysis of variance, Bartlett's test, Empirical modeling, Completely Randomized Design of Experiment, Randomized Block Design, Latin Square Design, Rotatable Central Composite Design.

Artificial Neural Network (ANN) Modeling, set theory – crisp and fuzzy sets, fuzzy logic based control theory and application, fuzzy logic based sensory evaluation, and control.

Optimization using genetic algorithm.

Digital image processing – Fast Fourier Transforms.

Data mining

Top Feedback: Laboratory Courses (Category: 25 or More Respondents)

Sl No	Name of Faculty Member	Title of Course	Course Number
1	Sanghamitra Ray, G&G (jointly)	Applied Paleontology Lab	GG49012
2	Sandeep Saha,AE (jointly)	Flight Testing Laboratory	AE49012
3	Melinda Kumar Bera, G&G	Sedimentology Lab	GG39008
4	Ashis Kumar Datta, AgFE (jointly)	Food Engineering Lab II	AG69008
5	Padmavati, M, RGSoIPL (jointly)	Moot Court	IP69102

Feedback Response For AG60148, INSTRUMENTATION AND CONTROL IN FOOD INDUSTRIES, L-T-P (3-1-0), Credit(4),
Session 2020-2021, Semester SPRING Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -11
Average (for teacher's assessment) -4.36

#	Question Text	Response Mean	Median	Display
	Teacher's Assesment			
I.1	Knowledge of the teacher in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.73	5.0	Bar
I.2	Stimulation of interest in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.36	4.0	Bar
I.3	Clarity of presentation and ease of understanding [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	3.73	4.0	Bar
I.4	Pace / speed of teaching [1 = Too Slow, 3 = Slow, 5 = Just Right, 3 = Fast, 1 = Too Fast]	4.45	5.0	Bar

I.5 Encouraging and responding to student's questions in the class
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.45 5.0 Bar
I.6 Quality of tests , assignments and tutorials
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.27 4.0 Bar
I.7 Quality of evaluation
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.36 4.0 Bar
I.8 Timely Feedback on student's performance
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.27 4.0 Bar
I.9 Enthusiasm of the teacher towards the subject
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.36 5.0 Bar
I.10 Friendliness and approachability of the teacher
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.64 5.0 Bar
Self Assesment of Students
I.13 Your effort in studying the course
[1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy] 3.73 4.0 Bar
I.14 Workload of this course in comparison with other courses
[1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy] 3.55 3.0 Bar

Feedback Response For AG60096, FOOD PLANT & EQUIPMENT DESIGN, L-T-P (3-1-0), Credit(4),
Session 2020-2021, Semester SPRING Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -6
Average (for teacher's assessment) -4.35
Question Text Response Mean Median Display
Teacher's Assesment
I.1 Knowledge of the teacher in the subject area
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.50 4.5 Bar
I.2 Stimulation of interest in the subject area
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.50 4.5 Bar
I.3 Clarity of presentation and ease of understanding
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.33 4.0 Bar
I.4 Pace / speed of teaching
[1 = Too Slow, 3 = Slow, 5 = Just Right, 3 = Fast, 1 = Too Fast] 5.00 5.0 Bar
I.5 Encouraging and responding to student's questions in the class
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.00 4.0 Bar
I.6 Quality of tests , assignments and tutorials
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.00 4.0 Bar
I.7 Quality of evaluation
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.17 4.0 Bar
I.8 Timely Feedback on student's performance
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent] 4.17 4.0 Bar
I.9 Enthusiasm of the teacher towards the subject

[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.67	5.0	Bar
I.10 Friendliness and approachability of the teacher			
[1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.17	4.0	Bar
Self Assesment of Students			
I.13 Your effort in studying the course			
[1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]		3.50	3.0 Bar
I.14 Workload of this course in comparison with other courses			
[1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]		3.33	3.0 Bar

27/05/2019

Feedback Response For AG60096, FOOD PLANT & EQUIPMENT DESIGN, L-T-P (3-1-0), Credit(4), Session 2018-2019, Semester SPRING Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -20
Average (for teacher's assessment) -4.43

#	Question Text	Response		
		Mean	Median	Display
	Teacher's Assesment			
I.1	Knowledge of the teacher in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.65	5.0	Bar
I.2	Stimulation of interest in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.65	5.0	Bar
I.3	Clarity of presentation and ease of understanding [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.50	5.0	Bar
I.4	Pace / speed of teaching [1 = Too Slow, 3 = Slow, 5 = Just Right, 3 = Fast, 1 = Too Fast]	3.60	3.0	Bar
I.5	Encouraging and responding to student's questions in the class [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.55	5.0	Bar
I.6	Quality of tests , assignments and tutorials [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.45	5.0	Bar
I.7	Quality of evaluation [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.50	5.0	Bar
I.8	Timely Feedback on student's performance [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.50	5.0	Bar
I.9	Enthusiasm of the teacher towards the subject [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.45	5.0	Bar
I.10	Friendliness and approachability of the teacher [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.45	5.0	Bar
	Self Assesment of Students			
I.13	Your effort in studying the course [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.90	4.0	Bar
I.14	Workload of this course in comparison with other courses [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.85	4.0	Bar

Histogram Details

24/04/2019 Welcome Ashis Kumar Datta to ERP, IIT Kharagpur

You are in: Academic (menulist.htm?module_id=16) / Feedback / Feedback Response

Print **Session Semester:** << 2018-2019 AUTUMN >>

AG31005	PRINCIPLES OF FOOD ENGINEERING	**View Objective Question Responses**	**View Subjective Question Responses**
AG39005	FOOD ENGINEERING LAB.	**View Objective Question Responses**	**View Subjective Question Responses**
AG69043	FOOD ENGINEERING LAB. - I	**View Objective Question Responses**	**View Subjective Question Responses**

Feedback Response For AG69043, FOOD ENGINEERING LAB. - I, L-T-P (0-0-3), Credit(2), Session 2018-2019, Semester AUTUMN Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -29
Average (for teacher's assessment) -4.54

#	Question Text	Response Mean	Median	Display
	Teacher's Assesment			
I.1	Knowledge of the teacher in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.79	5.0	**Bar**
I.2	Contribution of this laboratory in improving overall understanding of the subject [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.66	5.0	**Bar**
I.3	Contribution of this laboratory in developing experimental / analytical / programming skills [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.52	5.0	**Bar**
I.4	Encouraging and responding to student's questions in the class [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.72	5.0	**Bar**
I.5	Quality of assignments and experiments [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.52	5.0	**Bar**
I.6	Quality of evaluation [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.55	5.0	**Bar**
I.7	Timely and helpful feedback [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.48	5.0	**Bar**
I.8	Friendliness and approachability of the teacher [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.45	5.0	**Bar**
I.10	Facilities available in laboratory for completion of design exercises / experiments [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.17	4.0	**Bar**
	Self Assesment of Students			
I.11	Your effort in studying the course [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.72	4.0	**Bar**
I.12	Workload of this course in comparison with other courses [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.59	3.0	**Bar**
I.13	Knowledge and skills of teaching assitants [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.28	4.0	**Bar**

Histogram Details

24/04/2019

Feedback Response For AG69008, FOOD ENGINEERING LAB. II, L-T-P (0-0-3), Credit(2), Session 2017-2018, Semester SPRING Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -33
Average (for teacher's assessment) -4.38

#	Question Text	Response Mean	Median	Displa
	Teacher's Assesment			
I.1	Knowledge of the teacher in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.64	5.0	Bar
I.2	Contribution of this laboratory in improving overall understanding of the subject [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.45	5.0	Bar
I.3	Contribution of this laboratory in developing experimental / analytical / programming skills [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.48	5.0	Bar
I.4	Encouraging and responding to student's questions in the class [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.39	5.0	Bar
I.5	Quality of assignments and experiments [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.39	5.0	Bar
I.6	Quality of evaluation [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.33	5.0	Bar
I.7	Timely and helpful feedback [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.42	5.0	Bar
I.8	Friendliness and approachability of the teacher [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.27	5.0	Bar
I.10	Facilities available in laboratory for completion of design exercises / experiments [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.00	4.0	Bar
	Self Assesment of Students			
I.11	Your effort in studying the course [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.18	3.0	Bar
I.12	Workload of this course in comparison with other courses [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.21	3.0	Bar
I.13	Knowledge and skills of teaching assitants [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.03	4.0	Bar

Histogram Details

24/04/2019

Feedback Response For AG60148, INSTRUMENTATION AND CONTROL IN FOOD INDUSTRIES, L-T-P (3-1-0), Credit(4),
Session 2017-2018, Semester SPRING Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -24
Average (for teacher's assessment) -4.40

#	Question Text	Response Mean	Median	Display
	Teacher's Assesment			
I.1	Knowledge of the teacher in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.63	5.0	Bar
I.2	Stimulation of interest in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.46	5.0	Bar
I.3	Clarity of presentation and ease of understanding [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.38	5.0	Bar
I.4	Pace / speed of teaching [1 = Too Slow, 3 = Slow, 5 = Just Right, 3 = Fast, 1 = Too Fast]	4.42	5.0	Bar
I.5	Encouraging and responding to student's questions in the class [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.46	5.0	Bar
I.6	Quality of tests , assignments and tutorials [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.42	5.0	Bar
I.7	Quality of evaluation [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.38	5.0	Bar
I.8	Timely Feedback on student's performance [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.29	5.0	Bar
I.9	Enthusiasm of the teacher towards the subject [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.38	5.0	Bar
I.10	Friendliness and approachability of the teacher [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.25	5.0	Bar
	Self Assesment of Students			
I.13	Your effort in studying the course [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.58	3.5	Bar
I.14	Workload of this course in comparison with other courses [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.46	3.0	Bar

Histogram Details

24/04/2019

Feedback Response For AG60096, FOOD PLANT & EQUIPMENT DESIGN, L-T-P (3-1-0), Credit(4), Session 2017-2018, Semester SPRING Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -26
Average (for teacher's assessment) -4.22

#	Question Text	Response Mean	Median	Display
	Teacher's Assesment			
I.1	Knowledge of the teacher in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.38	5.0	Bar
I.2	Stimulation of interest in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.27	5.0	Bar
I.3	Clarity of presentation and ease of understanding [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.19	5.0	Bar
I.4	Pace / speed of teaching [1 = Too Slow, 3 = Slow, 5 = Just Right, 3 = Fast, 1 = Too Fast]	4.08	5.0	Bar
I.5	Encouraging and responding to student's questions in the class [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.08	5.0	Bar
I.6	Quality of tests , assignments and tutorials [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.27	5.0	Bar
I.7	Quality of evaluation [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.27	5.0	Bar
I.8	Timely Feedback on student's performance [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.31	5.0	Bar
I.9	Enthusiasm of the teacher towards the subject [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.23	5.0	Bar
I.10	Friendliness and approachability of the teacher [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.15	5.0	Bar
	Self Assesment of Students			
I.13	Your effort in studying the course [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.15	3.0	Bar
I.14	Workload of this course in comparison with other courses [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.35	3.0	Bar

Histogram Details

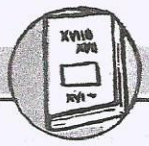
24/04/2019

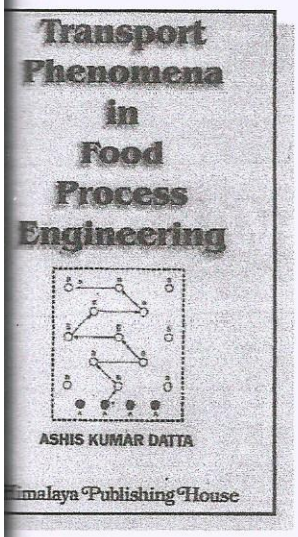
Feedback Response For AG60302, ADVANCED THERMAL OPERATIONS IN FOOD PROCESSING, L-T-P (3-1-0), Credit(4),
Session 2017-2018, Semester SPRING Faculty Name: Ashis Kumar Datta

No. of students who have given feedback -35
Average (for teacher's assessment) -4.34

#	Question Text	Response Mean	Median	Display
	Teacher's Assesment			
I.1	Knowledge of the teacher in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.46	5.0	**Bar**
I.2	Stimulation of interest in the subject area [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.31	5.0	**Bar**
I.3	Clarity of presentation and ease of understanding [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.29	5.0	**Bar**
I.4	Pace / speed of teaching [1 = Too Slow, 3 = Slow, 5 = Just Right, 3 = Fast, 1 = Too Fast]	4.43	5.0	**Bar**
I.5	Encouraging and responding to student's questions in the class [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.31	5.0	**Bar**
I.6	Quality of tests , assignments and tutorials [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.31	5.0	**Bar**
I.7	Quality of evaluation [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.31	5.0	**Bar**
I.8	Timely Feedback on student's performance [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.34	5.0	**Bar**
I.9	Enthusiasm of the teacher towards the subject [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.40	5.0	**Bar**
I.10	Friendliness and approachability of the teacher [1 = Poor, 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent]	4.26	5.0	**Bar**
	Self Assesment of Students			
I.13	Your effort in studying the course [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.34	3.0	**Bar**
I.14	Workload of this course in comparison with other courses [1 = Very Light, 2 = Light, 3 = Average, 4 = Heavy, 5 = Very Heavy]	3.37	3.0	**Bar**

Histogram Details





Transport Phenomena in Food Process Engineering

The book on Transport Phenomena in Food Process Engineering by Dr. Ashis Kumar Datta is an excellent publication on the processes covering the transport of energy in the form of heat, momentum and mass. Dr. Datta needs to be complimented for presenting these complex phenomena in a very simplified and easily understandable manner.

Starting from basics, Dr. Datta systematically develops complex equations without burdening the minds of the readers while keeping their interest intact. In spite of the fact that there are large numbers of complex and lengthy equations, there are very few errors. Though at times the reader gets a feeling of reading classroom notes, yet on the overall, the book is quite comprehensive and covers almost all the important topics. The language is brisk and to the point reflecting the teaching background of the author.

The author has been successful in taking the various topics from realm of theory to the reality of professional challenges by giving meaningful and real industrial problems. The author could have given more examples concerned with food processing. This inadequacy is however not a very serious shortcoming.

The chapters on heat transport particularly heat exchangers and numerical methods are well written. The author should be complimented for his analysis of topics on non-Newtonian fluids and forced convection.

The book is reasonably priced and can be an excellent substitute for very expensive imported books. The publisher could have used a better paper and could have provided better get up. Nevertheless the book will help fill the gap created by inadequacy of reasonably priced and easily understandable books in India and other developing countries.

The book will be an excellent introductory book to the science of transport phenomena. Considering the price and simplicity of language, the book would be very useful to the senior undergraduate and graduate students. The book is also recommended to the professionals engaged in designing of equipment or in analysis of complex problems in the area of momentum, heat and mass transport ◆

or: Ashis Kumar Datta

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Review of "*Transport Phenomena in Food Process Engineering*" by Ashis Kumar Datta, Indian Institute of Technology, Kharagpur, Published by Himalaya Publishing House, Mumbai, India.

Food process engineering is an integral part of Agricultural Engineering and similarly named engineering programs. Although numerous textbooks are written for food process engineering courses in a food science curriculum, textbooks are rare for such courses in an engineering curriculum. Without such textbooks, students are often forced to synthesize material from a number of chemical engineering and food science sources—not a very efficient process at the undergraduate level education. This book fills the need by integrating the engineering aspects with food processing applications.

Written as a textbook, the contents are organized around classic transport processes (momentum, heat and mass transfer). This makes the book easily understandable and usable by the largest cross section of engineers in the world. It has a logical progress from chapter to chapter. As a textbook, it can easily become part of curricula such as Agricultural, Food, Chemical and Biological Engineering.

Author has included many worked out examples that the students (and instructors) are often looking for. There are several problems to be worked out at the end of each chapter. Perhaps this can be expanded in the future editions of the book with additional problems that are in the context of food processing in India. The book uses mostly SI units, thus being consistent with other engineering texts in the recent times. Author has included numerical solutions, which are becoming the chosen method to solve realistic problems using computers. The book includes practical information on using the transport processes, such as the heat exchangers. It is also a sourcebook of information as it provides data on transport properties. The compact appearance of the book can make it easy and efficient to use.

The time and energy needed to write a textbook is hard to come by these days considering time commitments to research and teaching. I congratulate the author on being able to complete this textbook for the benefit of the students.

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