

Resume

NAME: **Syed Ahmed M. Said**

Position: Professor Mechanical Engineering Dept.
King Fahd University of Petroleum & Minerals (KFUPM)
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EDUCATION:

1982-1986: Ph.D. Mechanical Engineering, University of Tennessee Knoxville
Tennessee USA
1977-1979: M.S. Mechanical Engineering KFUPM Dhahran Saudi Arabia
1973-1976: B.Sc. Mechanical Engineering Brighton Univ. Brighton U.K.

EXPERIENCE:

Dr. Said is a Professor in the Mechanical Engineering Department and the coordinator of the Teaching and Learning Center at King Fahd Univ. of Petroleum & Minerals (KFUPM) in Dhahran, the Kingdom of Saudi Arabia. Also, he is the coordinator of the Clean Energy Research group in collaboration with MIT –USA and the Solar Energy research Group leader at the Center of Research Excellence in Renewable Energy (CoRE-RE) at KFUPM. Dr. Said received his Ph.D. degree in Mechanical Engineering from the University of Tennessee, Knoxville USA in 1986. Since then, he has been actively involved in teaching, research and community service at KFUPM.

Since joining KFUPM in 1986, Dr. Said has been involved in more than 30 funded research projects carried out by the Research Institute and the Mechanical Engineering Department. He has been a project manager for several of these projects. Dr. Said has published more than 100 technical papers and a large number of reports. Dr. Said established the Heat Transfer Research laboratory and recently, the Solar Cell deposition and characterization laboratory; PV Module performance and reliability indoor test laboratory and PV module outdoor test facility. Dr. Said recent research interest is on performance and reliability and dust mitigation of PV modules. Dr. Said received the distinguished teaching and researcher awards in the College of Engineering Sciences. He has attended several international conferences in the area of energy and renewable energy.

Teaching activities

- **Courses Taught**

Taught and coordinated a number of graduate and undergraduate courses in the area of Thermal sciences, Energy Conversion, Thermal Environment and Energy analysis and Combustion.

- **Short Courses**

Coordinated and participated in a number of short courses in the area of Thermal sciences, energy conversion, thermal Environment and Energy analysis and combustion.

- **Awards**

- Received the Best Teacher Award
- Received the Best Researcher Award
- Nominated for the Best Teacher Award

Research activities

- **M.S. and Ph.D. Supervision:**

Supervised and a member of committees of more than 25 M.S and Ph.D. students.

- **Research Projects:**

Managed and participated in more than 30 funded research projects during the last 10 years. *The following lists some of the recent funded projects:*

1. Erosion in Heat Exchangers. Nov. 2000 to Nov. 2003. Funded by **Saudi Aramco**
2. Evaluation of deadleg criteria. Dec. 2001 to Apr 2004. Funded by **Saudi Aramco**
3. Energy and Exergy based Performance Analysis of Boilers and Industrial Furnaces in Process Industries. Sept 2004 to Oct 2005. Funded by **SABIC**.
4. Analysis of water circulation in boilers. September 2002 to Mar 2006. Funded by **Saudi Aramco**
5. Turbulent Natural Convection Flow in Parallel and Converging-Plate Vertical Channels. Sep. 2002 Mar. 2006 Funded by **KFUPM**.
6. Feasibility and Performance of Ground-Source Heat Pump in the Kingdom of Saudi Arabia. Sept 2004 to Mar 2008. Funded by **KACST**.
7. Evaluation of Flow Maldistribution in Air-Cooled Heat Exchangers. Sep. 1, 2004 to May 1, 2006. Funded by **Saudi Aramco**
8. Vortex Shedding-free Strainer. Sept 2005 to Dec 2007. Funded by **Saudi Aramco**
9. Determination of maximum Boiler Swing Rates. May 2007 to Dec. 2009. Funded by **Saudi Aramco**
10. Assessment of hybrid solar power application in the Kingdom of Saudi Arabia", KFUPM MIT. Sept 2008 to Sept 2010. Funded by **CoRE-RE**
11. *Enhancing the Performance of Silicon Based PV Cells.* Sept 2008 to Sept 2013. Funded by **KFUPM-MIT** Collaboration Center.
12. Characteristics of Natural Convection Heat Transfer in an Array of Discrete Heat Sources, Funded by **KFUPM** 2010-2013.
13. Experimental Investigation of flow Maldistribution in Air Cooled Heat Exchangers, Funded by **KFUPM** 2010-2012.

14. Development of a simulation model in Arabic for the Performance of energy use in buildings. Funded by **KACST General** Program 2009-2012
15. Development of a Totally Solar Powered Refrigeration System – Phase # I- NSTIP # 08-ENE56-4. Funded by **KACST NSTIP** Nov. 2010- Oct. 2012
16. PV Module Performance and Reliability in Dhahran Saudi Arabia. Funded by CoRE-RE 2010-1015
17. FLOW INDUCED VIBRATION IN HEAT EXCHANGERS (Phase II: Triangular and Rotated-Triangular Bundles). Funded by **Saudi Aramco** OCT. 2011-Sept. 2013.
18. Technology Innovation Center in Carbon Capture and Sequestration (CCSTIC), Funded by **KACST** 2010-2015.
19. Improving Physical Learning Environment kFUPM 2014-2015
20. Engineered Dust & Water Repellant Surfaces for Solar PV & Concentrated Solar Applications in Desert Environments- R16-CE-11-NSTIP
21. Reducing Diesel Demand in Saudi Arabian Farming Sector using Solar PV Systems- 13-ENE1727-04 NSTIP

- **Patents**

- US 8,881,539 B1

HYBRID STORAGE ABSORPTION REFRIGERATION SYSTEM

- US 8720216 B1

Hybrid aqua-ammonia and lithium bromide-water absorption chiller

- US9145299

Dispersive Liquid-Liquid Microextraction Method of detecting-Nitrosoamines.

- **Publications in Refereed Journals**

1. Abdelralunan, M., **Said, S.A.M.**, Shuaib, AN. "Atmospheric turbidity coefficient in Dhahran". Int. J. of Solar Energy, Vol. 41,2 (1988).
2. **Said, S.A.M.** and. Abdelralunan, MA., "Energy efficiency of a building in the Eastern Province of Saudi Arabia: Parametric analysis with the DOE2.1a computer program", ASHRAE Transactions, Vol.95, Pt.1 (1989).

3. **Said, S.A.M.**, "A case study of solar photovoltaic powered irrigation in the Northern Sudan' SunWorld, Vol. 13,2 (1989).
4. Arshad, K. and **Said, SAM.**, "Pumped Solar Domestic Hot Water (SDHlwl) system design guidelines", SunWorld, Vol. 12, 4 (1989).
5. Eabel,V.J., **Said, S.A.M.**, and Abdelrahman, MA.. "Validation and a micro-computer based hourly energy analysis computer programs for a residential building", Energy, Vol.14,4 (1989).
6. **Said, S.A.M.** and Krane, Ri., "An Analytical and Experimental Investigation of Natural convection heat transfer in vertical channels with a single obstruction", Int J. Heat Mass Transfer. Vol. 33, 6 (1990). (Based on thesis dissertation).
- 7, **Said, S.A.M.**, Abdelrahxnan, M.A. and Racz, O., "Economics of thermal insulation in the Eastern Province of Saudi Arabia", ASHR.AE Transactions, Vol. 96, Pt. 1(1990).
8. **Said, S.A.M.** "Effect of dust accumulation in thermal and photovoltaic flat-plate collector performance", I. Applied Energy, Vol. 37, 1(1990).
9. Shaabid, SM.. Kar A., and **Said, S.A.M.**, "Second Law Analysis and Optimization of Solar Hot Water Systems". Arabian Journal for Science and Engineering, Vol. 15. B4 (1990).
10. Abdelrahman, M., **Said, S.A.M.**, Ahmed. A. and AbulhamayeL H., "Thermal conductivity of some major building materials in Saudi Arabia". J. of Thermal Insulation. Vol. 13(1990)
11. **Said, S.A.M.** and A.I-Zaharana, I. "An analysis of climatic variables for thermal design of buildings in Khamis Mushayt, Saudi Arabia", Building and Environment, Vol. 26, 4, (1991), pp. 363-369
12. **Said, S.AM.** "Degree-day base temperature for residential building energy prediction in Saudi Arabia", ASHRAIE Transactions, Vol. 98, Pt. 1 (1992).
- 13 Al-Hammad, A and **Said, S.A.M.**, "Load and energy requirements in residential buildings in Saudi Arabia: A comparative study". Int. J. of Energy Research, Vol. 16, (1992), pp. 533-543.
14. **Said, S.A.M.** "Applications of photovoltaic systems in Saudi Arabia", Renewable Energy, Vol. 2, 6, (1992), pp. 587-590.
15. **Said, S.A.M.** and Kachy, H., "The generation of a representative database for the City of Riyadh", King Abdelaziz University Journal (1993).
16. **Said, S.A.M.** and Zubair, S.M., "On Second Law Efficiency of Solar Collectors", Journal of Solar Energy Engineering, ASME Transactions, Vol. 115,24(1993).
17. **Said, S.A.M.** and Al-Zaluana, I., "Analysis of climatic variables for thermal design of buildings in Riyadh and Jeddah", Building and Environment (1993).
18. **Said, S.A.M.**, and Al-Hamnad, A., "Energy Conservation measures on residential buildings in Saudi Arabia", Int J. of Energy Research, Vol. 17, 327-338 (1993).
19. Abdelralunan, M.A., **Said, S.A.M.** and Ahmad, A., "A comparison of energy consumption and cost-effectiveness of four masonry materials in Saudi Arabia", Energy Vol. 18, No.11 (1993), pp. 1181-1185.
20. **Said, S.A.M.** and Kady, H., "Generation of Representative Weather Data for Saudi Arabia", Applied Energy, Vol. 48, (1994), pp. 131-136.

21. **Said, S.A.M.**, Al-Zalurnah, E.T., "Development of Comfort Zone Charts Using the Isopleth Chart Technique, Vol. 29, No. 1, (1994), pp. 13-20
22. **Said, S.A.M.** and Ismail, B., "Exergetic assessment of the coolants HCF123, HFC134a, CFC11 & CFC12", Energy, Vol. 19, (1994), pp. 1131-1186.
23. Solieman, Y.M., **Said, S.A.M.** and Ismail, B., "Assessment of HCFC22 as a replacement for CFC12", Applied Energy, Vol. 49, (1994).
24. **Said, S.A.M.**, Suleiman, Y.M. and Ismail, B., "Theoretical performance of HCFC123 as an alternative to Jell", Energy. Vol. 20, No.3, (1995), pp. 205-208.
25. Habib, M.A., **Said, S.A.M.** and Al-Bagawi, J., "Thermodynamic performance analysis of the Ghazlan Power Plant", Energy, Vol. 20, (1995), pp. 1121-1130
26. Habib, M.A., **Said, S.A.M.**, and Al-Zaharna, I., "Optimization of reheat pressures in thermal power plants", Energy. Vol. 20, No.6, (1995), pp. 555-565
27. Yilbas, B.S., Sahin, Al., Al-Garni, A., **Said, S.A.M.** Ahrnad, Z., Abdulaleem, B. and Sanii, M., "Plasma nitriding of Ti-6AL-4V alloy to improve some tribological properties", Journal of Surface Coatings and Technology, Vol. 80, No. 3, (1996), pp. 287-294.
28. **Said, S.A.M.**, Kadry, EM. and Ismail, B., "Climatic conditions for Saudi Arabia", ASHRAE Transactions, Vol. 102 (1996).
29. **Said, S.A.M.**, "Natural convection flows in convergent vertical channels", Tnt. J. of Energy Research, Vol. 20, (1996).
30. Yilbas, B.S., Sahin, A.Z. and **Said, S.A.M.**, "Investigation into some tribological properties of plasma nitrided hot-worked tool steel AISI Hi 1" Journal of Materials Engineering and Performance, Vol. 5(2) (1996).
31. **Said, S.A.M.**, AJ-Hammad, A. and Grondzik, W., "Measured Annual Performance of 10 Roof and 14 Wall Assemblies in Dhahran, Saudi Arabia", ASHRAE Transactions, Vol. 103 (1997).
32. **Said, S.A.M.**, M.A. Habib, and M. Khan, "Turbulent Natural Convection Flow in Partitioned Enclosure", Computer and fluids, Vol. 26(6) (1997), pp 546-563.
33. **Said, S.A.M.** and Al-Zaharna, E., "Quantitative Assessment of Indoor Air Pollution in Workplaces", Tnt. Journal Environmental Health Research, Vol. 8(1) (1998), pp. 65-76.
34. Habib, M.A., Siddique, I., Badr, H.M. and **Said, S.A.M.**, "Calculations of Turbulent Flow and Heat Transfer in Periodically Converging-Diverging Channels" Computer and fluids. Vol. 27(1) (1998), pp. 95-120.
35. Yilbas, B.S, M. Sami, Nickel, J., Coban, A. and **Said, S.A.M.**, "Investigation into Electron Austeritic 321 Type Stainless Steel", Journal of Material Processing (1998), pp 13-20.
36. Koc A., Yilbas, B.S., Koc, Y., **Said, S.A.M.**, Gbadebo. S. and Sand, M., "Material Response to Lasser Pulse Healing - A Kinetic Theory Approach", Optics and Laser Technology (Accepted).
37. **Said S.A.M.**, Al-Farayedhi, A., Habib, M., Gbadebo. S.A. and Asghar. A., "Experimental Investigation of Heat Transfer in Pulsating Turbulent Pipe Flow", Journal of Heat and Fluid Flow.
38. **Said S.A.M.**, Hasan, A.A. and Sulciman, Y.M., "Cost-based Decision-Making Frame work for

CFC Conversion Strategy ' Energy Conversion and Management, Vol.40, (1999), pp 273-279.

39. Habib MA., **Said, S.A.M.**, A1-Farayedhi, A., Al-Dini, S.,A.Asghar and Gbadebo, S.A., "Heat transfer characteristics of pulsated turbulent pipe flow", Heat and Mass transfer, Vol. 34, (1999). pp. 273-279
40. M.A. Habib , **S.A.M. Said**, M.A. El-Hadidy and I. Al-Zahama, "Optimization procedure of a hybrid photovoltaic wind energy system," Energy ,Vol.24, (1999), pp. 19-929.
41. MA. Habib, **S.A.M. Said** and I. Al-Zaharna, "Thermodynamic Optimization of Reheat Regenerative Thermal-power plants", Applied Energy, Vol.63, (1999), pp. . 17-34.
42. S.A. Gbadebo, **S.A.M. Said**, M. A. Habib," Average Nusselt Number Correlation in the Thermal Entrance Region of Steady and Pulsating Turbulent Pipe Flows", Heat and Mass transfer, Vol. 35 (5) (1999), pp. 377-381.
43. **Said S.A.M.**, Soleiman, Y.M. and Hasan, A.A., "CFC Containment, Conversion and Replacement Cost Anal sis", Energy Conversion and Management, Vol. 41, (2000), pp. 483-491.
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45. M. A. Habib, **S. A. M. Said**, Ahmed S. A. and A. Asghar, " Velocity Characteristics of Turbulent Natural Convection in Symmetrically and Asymmetrically Heated Vertical Channels, " Int. J. of Experimental Thermal and Fluid Science, Vol. 26, (2002), pp 77-87.
46. **Said, S.A.M.**, M.A. Habib amd M. Owais Iqbal, "A database for building energy prediction in Saudi Arabia", Energy Conversion and Management Vol. 13, 3(2003), pp. 286-308.
47. M. A. Habib, **S. A. M. Said**, Ahmed S. A. and A. Asghar, " Velocity Characteristics of Turbulent Natural Convection in Symmetrically and Asymmetrically Heated Vertical Channels, " Int. J. of Experimental Thermal and Fluid Science, Vol. 26, (2002), pp 77-87.
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49. M. A. Habib, **S. A. M. Said**, M. O. Iqbal, " Heat Transfer to Pulsation Turbulent Flow in an Abrupt pipe Expansion" International Journal of Numerical Methods for Heat & Fluid Flow, Vol. 44 (2003) pp. 191-204.
50. **S. A. M. Said**, M. A. Habib and M. O. Iqbal, 2003, "Heat Transfer to Pulsation Turbulent Flow in an Abrupt pipe Expansion", Int. Journal of Numerical Methods for Heat & Fluid Flow, Vol. 13, No. 3, pp. 286-308.
51. **S. A. M. Said**, M. A. Habib and M. O. Iqbal, 2003, "Database for Building Energy Prediction on Saudi Arabia", Journal of Energy Conversion and Management, Vol. 44, pp. 191-201.
52. M. A. Habib, A. M. Attiya, **S. A. M. Said**, I. Eid and A. Z. Aly 2004, "Heat Transfer Characteristics and Nusselt Number Correlations of Turbulent Pulsating Pipe Air Flows, "J. of Heat and Mass Transfer, Vol. 40, pp. 307 – 318.
53. M. A. Habib, H. M. Badr, R. Ben-Mansour and **S. A. M. Said**, 2004, Numerical Calculations of

Erosion in an Abrupt Pipe Contraction of Different Contraction Ratios, International Journal for Numerical Methods in Fluids, 46 (1)(2004): 19-35.

54. M. A. Habib, H. M. Badr, **S. A. M. Said**, I. Hussaini and J. J. Al-Bagawi, 2004, "On the Development of Deadleg Criterion", ASME J. Fluids Engineering, Accepted.
55. M. A. Habib, **S.A.M. Said**, H. M. Badr and I. Hussaini and J. J. Al-Bagawi, "Effect of Geometry on Flow Field and Oil/Water Separation in Vertical Deadlegs," The International Journal of Numerical Methods for Heat and Fluid Flow, Vol. 15(4)2005,pp. 348-362.
56. M. A. Habib, R. Ben-Mansour, H. M. Badr and **S. A. M. Said** and S. Al-Anizi, 2004, "Erosion in the tube entrance region of a shell and tube heat exchanger", International Journal of Numerical Methods for Heat and Fluid Flow", Accepted.
57. H. M. Badr, M. A. Habib, R. Ben-Mansour and **S. A. M. Said**, 2005, "Numerical investigation of erosion threshold velocity in a pipe with sudden contraction, International Journal of Computers and Fluids", Vol. 34, No. 6, pp. 721-742.
58. M. A. Habib, H. M. Badr, **S. A. M. Said**, E. M. A. Mokheimer, I. Hussaini, M. Al-Sanaa, 2005, "Characteristics of flow field and water concentration in a Horizontal Deadleg," Journal of Heat and Mass Transfer, HEAT AND MASS TRANSFER 41 (4): 315-326 Feb 2005.
59. H.M. Badr, M.A. Habib, R. Ben-Mansour and **S.A.M. Said**, 2004, "Erosion in the tube entrance region of an Air-Cooled heat exchanger," ASME Journal of Impact Engineering, Submitted.
60. R. B. Mansour, M.A. Habib, H.M. Badr, S. Anwar and **S.A.M. Said**, 2005 "Comparison of Different Turbulence Models and Inlet Boundary Conditions in Predicting Turbulent Natural Convection Flow and Heat Transfer in Vertical Parallel-Plate Open Channels", Submitted.
61. H.M. Badr, M.A. Habib, S. Anwar, R. Ben-Mansour and **S.A.M. Said**, "Turbulent Natural Convection in Vertical Parallel-Plate Channels", Submitted.
62. J. J. Al-Bagawi, **S. A. M. Said**, and S. M. Zubair, "Fouling Growth Evaluating Methods for Shell and Tube Heat Exchangers", International Journal of Heat Exchanger, 2005.
63. J. J. Al-Bagawi, **S. A. M. Said**, and S. M. Zubair, "Shear Enhancing Fouling Reduction in Heat Exchanger", International Journal of Heat Exchanger, 2005.
64. **S. A. M. Said**, M. A. Habib, H. M. Badr and S. Anwar, "Turbulent Natural Convection between Inclined Isothermal Plates," Journal Computers and Fluids. (2005) 34:1025-1039.
65. **S. A. M. Said**, M. A. Habib, H. M. Badr and S. Anwar, "Numerical Investigation of Natural Convection Inside an Inclined Parallel-Walled Channel," International Journal for Numerical Methods in Fluids". (2005) 49:569-582.
66. M.A. Habib, H.M. Badr, **S.A.M. Said**, R. Ben-Mansour, and S. S. Al-Anizi "Solid-particle Erosion in the tubes of the tube sheet of a shell and tube heat exchanger"Int. J. for Numerical Methods in Fluids (2006) 50:885-909.
67. T.F. Ayinde, **S.A.M. Said** and M.A.Habib "Experimental Investigation of Turbulent Natural Convection flow in a Channel" Heat Mass Transfer (2006)42:169-177.
68. T.F. Ayinde, **S.A.M. Said** and M.A. Habib, Turbulent Natural Convection Flow in Vertical Channel with Anti-Symmetric Heating, Journal of Heat and Mass Transfer, Submitted.
69. M. A. Habib, S. A. M. Said and R. Ben-Mansour, J. J. Al-Bagawi and K. M. Al-Mansour, 2008, Correlations of flow Maldistribution parameters in an Air Cooled Heat Exchanger.

International Journal for Numerical Methods on Fluids, Int. J. Numer. Meth. Fluids 2008; 56:143–165.

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71. M. A. Habib, **S. A. M. Said** , R. Ben-Mansour, J. J. Al-Bagawi and K. M. Al-Mansour, "Correlations of flow Maldistribution parameters in an Air Cooled Heat Exchanger", Int. J. Numer. Meth. Fluids 2008; 56:143-165
72. M.H. Sharqawy, E.M. Mokheimer, M.A. Habib, H.M. Badr, **S.A. Said** and N.A. Al-Shayea, 2009, Energy, Exergy and Uncertainty Analyses of the Thermal Response Test for a Ground Heat Exchanger, International Journal of Energy Research, **2009**, Vol. 33(6), PP.582-592
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81. Amir Abdallah, Eric Johlin, Tesleem Asafa, Nouar Tabet, Jeffrey C. Grossman, **S.A.M. Said** and Tonio Buonassisi. Mechanical integrity of amorphous silicon thin films on a silicon substrate, to be submitted(2011) .
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92. **S.A.M. Said** and H. Walwill "Effect of Dust on PV Module Performance and its Mitigation" submitted-- *Renewable Energy Journal* 2013.
93. M.J. Adinoyi and **S.A.M Said** "Effect of Dust Accumulation on the Power Outputs of Solar Photovoltaic Modules " *Renewable Energy Journal* Vol. 60 pp. 633-636 (2013).
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95. M.J Adinoyi and **S.A.M Said** "Effect of Dust Accumulation on the Power Outputs of Solar Photovoltaic Modules "Accepted- *Renewable Energy Journal* 2013.
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Current responsibilities

- Professor at the Mechanical Engineering Dept. KFUPM
- **Coordinator Teaching and Learning Center**, Deanship of Academic Development, KFUPM.
- **Coordinator, the Clean Energy Research Group MIT-KFUPM Research Collaboration.**
- **Deputy PI, KACST-TIC CCS**

Other activities

Served in the following:

- ***The Board and Executive Committee of KFUPM-MIT Clean Water and Clean Energy Research Center.***
- ***The Board and Executive Committee of the Center of Research Excellence in Renewable Energy (CoRE-RE)***
- ASME Eastern Province Chapter
- Saudi Mechanical Engineering Society
- KFUPM Schools

Serving in the following:

- Executive Committee of KFUPM-MIT Clean Water and Clean Energy-member
- Scientific Committee of TIC on CCS-member
- Executive Committee of TIC on CCS -member
- KFUPM NCAAA Institutional Steering Committee-member
- KFUPM NCAAA Learning & Teaching Committee-Chairman

Also, served as:

1. Consultant to Prince Mohammad University
2. Chairman, American Accreditation Board for Engineering and Technology (ABET) Quality Control committee at KFUPM.
3. Chairman, Planning Committee, Mechanical Engg. Dept.
4. Chairman, Exit Exam. Committee, Mechanical Engg. Dept.
5. Member, Higher Education in KSA Strategic Planning Team
6. Coordinator, Mechanical Engineering Cooperative program .

7. Director, Heat Transfer Laboratory for more than 10 years.
8. ASME Student Advisor

Workshops on Program and Institutional Assessment and Accreditation

Attended and going to attend a number of Workshops on Programs Accreditation offered by ABET and NCAAA. Latest workshops include:

1. Learning Outcomes and Assessments for Academic Programs Jan 2015
2. Mission, Goals, Objectives and Program Quality Assurance Process Jan 2013
3. Teaching and Learning Strategies May 2010
4. Preparations for Actual NCAAA Accreditation Site Visit
5. IDEAL workshop at KKFUPM –ABET through Video Conference
6. ABET Workshop: Fundamentals of Program Assessment – 5-6 Dec. 2014
7. External Reviewers Training –NCAAA Nov. 2015
8. IDEAL workshop at KKFUPM - December 2015.