Development of JD/DD Education Model at SIT

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Abstract

International educational programs are becoming more global in these days. Joint degree programs initiated by world universities are gaining importance and are being implemented around the world. A recent study report found that about a third of all international undergraduate students in England transferred from program delivered offshore. Another Canadian survey notes that a number of institutions offering programs in collaboration with international partners have nearly doubled since 2006. SIT is also interested to uncover why joint degree (JD) programmes and dual degree (DD) programmes maintain an increasing trend in the world frontier. In the first year, we had tried to look at a survey in order to assess how world universities are performing in JD/DD programmes, its major challenges and try to comprehend regarding implementation methodologies for degree systems into SIT graduate school program. In this program, we considered their world ranking, location of the university, and their field of interest. Further, we also visited specific institutions in USA and Asia and met with specific experts in this field to implement DD/JD program at SIT and more details are presented.

Keywords: Joint Degree, Double Degree, Internationalization, world ranking, teaching in English

1. Joint and Dual degree programmes in Northern America

The important universities in Northern America those who are conducting joint and dual degree programmes are listed here. They are, Stanford University, California Institute of Technology (Caltech), North western university, Cornell University, University of Texas at Austin, Duke University, University of Georgia, University of Georgia School of Social Work, University Chicago, Brown University and New York University [1,2]. Joint degree programs of Stanford University focus on law, business administration and computer science, whereas the California Institute of Technology (Caltech) conducting dual degree programmes in all the major areas of science and technology and medical sciences. Dual degree programmes of North Western University are in Arts, science and engineering. But the, Cornell University focuses on dual degree programme in law. Similarly, University of Texas at Austin has the dual degree programmes in computational engineering, in addition to varies fields of Arts and law. This university also collaborating with other foreign institutes and conducting varies dual degree programs in science and MSSW.

Duke University is listed their dual degree programmes in medical sciences, law and MBA. University of Georgia also offer their dual degrees in law, MBA, MPA and MSSW. Also this university offering joint degree programmes in M.P.H and Sport Management and Policy. University Chicago’s dual degree programmes are focus on Middle Eastern studies, divinity studies, MBA, law, social service administration, Arts in teaching, Health Administration Policy and Medicine. Brown University also offers dual degrees in medicine and public health awareness. Simillarly, New York University also conducts dual degree programmes in medicine and arts.

2. Joint and Dual degree programmes in Asia:

The following universities in Asia come under top 50 of the QS University Rankings and they are offering double/dual or joint degree programs on various disciplines including science and technology. The double/dual or joint degree programs in some of these institutions are in collaboration with foreign universities. Asian universities those are conducting the dual degree programmes are National University of Singapore (NUS), Singapore, Nanyang Technological University (NTU), Singapore, The Chinese University of Hong Kong (CHUK), China, Pohang University of Science and Technology (POSTECH), South Korea, City University of Hong Kong (City U), China, Tohoku University, Japan, Keio University, Japan, Waseda University, Japan, Shanghai Jiao Tong University (SJTU), China, Indian Institute of Technology Bombay, India, Indian Institute of technology Delhi, India, National Tsing Hua University (NTHU), Taiwan and Kyung Hee University, South Korea.

National University of Singapore (NUS), Singapore allows dual degrees, in most of their programmes which include, physics, engineering, MBA and law. This university also collaborating with foreign universities (France, USA and UK) and offering dual degree programmes. Also, Nanyang Technological University (NTU), Singapore offering dual degrees in most of the engineering streams in addition it offers programmes in commerce, psychology,
economics, Media Analytics and English literature. Dual degree programmes in Chinese University of Hong Kong (CHUK), China, focus on arts (language studies), engineering streams and BBA.

Tohoku University, Japan permitting dual degree programmes with foreign universities such as France and Sweden and it also conducting joint education program with China. Keio University, Japan also conducting dual degrees along with foreign countries such as France, Germany, Italy, Sweden, Spain, Belgium, Korea and China. This University’s programmes mainly focus on Science, Engineering, MBA and Media. Waseda University, Japan conducting dual degree programmes with abroad universities such as NUS, NTU, Home, Peking and Fudan. Waseda university dual degrees focus on political science and economics. The dual degree programmes of Shanghai Jiao Tong University (SJTU), China, in various engineering branches.

Hong Kong Baptist University (HKBU), conducting dual degree programmes in arts, social sciences and medicine. But the National Chiao Tung University, Taiwan offering dual degree programmes in Photonics with the collaboration of Sweden and USA. Tsinghua University, China listed their dual degree programmes in computer science and medicine. The dual degree programs of Kyung Hee University, are organized with the support of United Nations Associations. Dual degree programmes of National Tsing Hua University (NTHU), Taiwan focus on management and technology whereas the most of the Indian institutions such as Indian Institute of Technology, Bombay, Indian Institute of Technology, Delhi and Indian Institute of Technology, Madras are offering dual degrees in Science and technology.

3. Joint and Dual degree programmes in Australia:

Australian institutions currently offer more than 800 programs offshore, in that the most part are in Malaysia, China, Singapore, and Hong Kong. The following listed ranking institutions in Australia offering joint and dual degree programmes. The universities are, Australian National University, University of technology Sydney, University of Melbourne, University of Sydney, Monash University, Griffith university, University of south wales and Curtin University. Australian National University (ANU) offers joint & dual doctor of philosophy programs in most of the science discipline and the university also conducting programs with the collaboration of universities in Asia and Europe. In addition the university conducting double degree programmes (Bachelor and Master programs) in most of the arts, business, social sciences and sciences. University of technology Sydney offers dual/joint PhD degree programs in law, business, and health with the collaboration of Asian and European institutes. Their dual degree programs include business, science, medicine and economics. The university also offering bachelors combined honors programs in Engineering and Business. University of Melbourne conducting joint Ph.D programmes in law with the collaboration of Asian and Europe universities. Also this university offering dual degree programmes, in most of the streams such as education, architecture, arts, science, music, business and economics, engineering and IT, fine arts and music, medicine, dentistry and health sciences, veterinary and agricultural sciences. University of Sydney conducting joint degree programmes with Go8 universities within Australia and France. Their programmes are focus on arts, politics, economics and social sciences. Monash University also offers dual degrees in most of the streams arts, engineering, sciences, economics, commerce, business, laws and medicine. Griffith University participating Joint PhD programmes in sciences with University of Chinese Academy of Sciences. University of South Wales and Curtin University also having Joint Ph.D programmes in science and engineering.

4. Joint and Dual degree programmes in Europe:

Europe may be the birth place of joint and dual degree programmes [3-5]. Matthias Kuder, deputy director of the Center for International Cooperation at Free University of Berlin, says it started in Europe in the 1980s and 1990s and now it is in the race “a part of the standard at many institutions.” Here I listed the top universities having dual and joined degree programmes in Europe. The universities are, University of Heidelberg, Technische Universität München, Freie Universität Berlin, HTW Berlin, University of Tübingen, University of Freiburg, University of Mannheim, Georg-August-Universität Göttingen, University of Bonn, Karlsruhe Institute of Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg, University College London, UK, Ecole Polytechnique Fédérale de Lausanne, University of Zurich, University of Barcelona, École Normale Supérieure, École Polytechnique, Paris-Sud University, Mines ParisTech, KU Leuven, Ghent University, Université Catholique de Louvain, University of Vienna, Universität Innsbruck, Universität Innsbruck, Karl-Franzens-Universität Graz, Johannes Kepler University Linz, Scuola Superiore Sant’Anna, University of Trento, University of Amsterdam and Saint-Petersburg State University. In Europe, University of Heidelberg has a joint PhD program in law with Tohoku University, Japan. The students in this university have the accessibility for Tohoku and Heidelberg award scholarship, currently to the value of the fellowship about 160,000 Yen per month. The joint double degree programmes in Technische Universität München are in management, science and engineering. The
focus of Freie Universität Berlin are in physics, earth science, politics, public policy and management with the collaboration of France, Russia, Korea, Japan and China. HTW Berlin has the double degree programme in business whereas the University of Tübingen has the double degree programs in economics, European economics, European management. Double degree programmes of University of Freiburg are in liberal arts and sciences. Students of these programmes are receiving found from DAAD Double Degree Scholarship. University of Mannheim’s also has the double degree programs in management, with the collaboration of foreign universities whereas the Georg-August-Universität Göttingen, has a double degree programme in international economics, joined support of Rijks universiteit, Groningen. University of Bonn, also has the international double degree programs in arts with the collaboration of Europien and Asian countries and the courses of Karlsruhe Institute of Technology are mostly in sciences. But the Friedrich- Alexander-Universität Erlangen- Nürnberg has the double degrees in arts and sciences. University College London, UK offers double degree programmes in economics, politics and international relations, history and business collaboration with the collaboration of European countries. École Polytechnique Fédérale de Lausanne, University of Zurich, University of Barcelona, École Normale Universität Munchen, Freie Universität Berlin, HTW Berlin, University of Tübingen, University of Heidelberg, Technische Universität Munchen, are in management, science and engineering.

Griffith University participating Joint PhD programmes in sciences with University of Chinese Academy of Sciences. Université Catholique de Louvain, University of Vienna, Universität Innsbruck, Karl-Franzens-Universität Graz has joint master degree programmes in rural development, law, economics, photonics and biomedical and environmental engineering. KU Leuven, also offers joint dual, double and joint degrees in engineering. Double degree programme of Université Catholique de Louvain are in Linguistics. Similarly, University of Vienna also has the double degrees but the focus are in Strategy, innovation and management control, and marketing. University of Innsbruck has the double degree programs in arts and business administration whereas the Karl-Franzens-Universität Graz has joint degrees in English, American studies, sociology, history of South-Eastern Europe, South-Eastern European studies, Jewish studies and gender studies. Johannes Kepler University Linz has the joint degree programme with southern Taiwan University of Science and Technology in the field of business administration whereas Scuola Superiore Sant’Anna’s has the joint degree programme is in Photonics. University of Trento also has the joint double degrees in their bachelors and masters programmes. Double degree programme of University of Amsterdam are in mathematics, econometrics, heritage studies, arts, and culture. But the Delft University of Technology has double degree programme in hydraulic engineering and water resources management. Saint-Petersburg State University also offers various arts programmes with European universities, whereas the Utrecht University has the programme in programme in physics and liberal arts & sciences.

4. Observations and Key points:

i) While the ultimate goal is for students to be able to acquire two degrees, universities began with a joint education program because they believed that developing exchange between the two universities researchers and students would be important to the success of their project.

ii) In USA, most of the universities offering courses in MA, law, or in the business administrations and Medicine. Number of universities offering Joint degrees in Science (Physics, Math or Science) is comparable less.  

iii) The dual degree programs in most of the top universities in Asia are having in science and engineering. In USA number of dual degree programmes in Law, business administrations are quite high comparable with science and technology.

iv) In Asian universities, nearly six universities are offering their dual degrees with foreign universities. In which three of them from Japan, they are Keio University, Tohoku University and Waseda University.

v) Dual/Joint degree programmes offering institutions and their ranks are quit high, in their country and around the globe.

vi) Most of the top universities in Australia have the double degree programmes in bachelor degrees besides Australian National University have double degree programmes in Master degree programmes.

vii) Australian and Asian universities are concentrating all the fields like, Arts, Sciences, Medicine, Engineering, business, music, economics etc.
viii) The top universities like Cal Tech, NUS and ANU, all them much concentrating on dual degree programmes and also opened dual degree programmes in most their degree streams.

ix) Dual/Joint degree programmes leading to the Universities and colleges are more and more looking away from their own campuses to keep pace with a quickly globalizing world, (report from the Institute for International Education).

5. Establishing the contacts with world especially for JD/DD programs.

On September 2016, we had visited the University of Houston (UofH), Texas and Denver Convention Center, Colorado. During the trip, I had discussed the potential aspects of UofH for future student exchange programs, especially the joint degree (JD)/double degree (DD) programs, etc. The main emphasis was directed towards DD/JD programs and implementation at Graduate School of Science and Engineering. Prof. Dr. Roy, senior professor at Department of Physics was surprised to learn that Japanese Govt. had strongly advocated globalization for Japanese universities towards the DD/JD programs. During the discussion, he confirmed their interest in the Top Global University Project activities since he had worked in joint programs with several international institutions. Specially, he welcomes SIT students to UofH since they cannot charge if they would work in laboratory based research, providing research facilities, and university dormitory. Further, he accentuated that students will be charged if they take official courses at UofH. He is interested in increasing Material Science students especially those who are interested in motor/generator; high field magnets, radiation studies, red cell separation from blood, levitation trains, cc conductor for high field operation etc., without any charge. However, he had declared that, at the moment, Department of Physics, UofH doesn’t have any JD/DD programs.

I visited the Department of Mechanical Engineering and had a fruitful discussion with Prof. Dr. Venkat Selvamanickam, M.D. Anderson, Chair at UofH. Prof. Dr. Venkat is dealing large DOE, Govt. of USA projects specially Superconductors, Photovoltaics, Thermoelectrics, Batteries, etc., He is very much interested in research collaboration, joint research projects between UofH and SIT. He promised to build a fruitful collaboration between University of Houston and SIT, which will help to develop the DD/JD programs with SIT and UofH. Basically, UofH has been working in JD/DD programs specially for the Master of Business Administration including the following; MBA/JD program, Master of Science in Hospitality (MBA/MS), Master of Industrial Engineering (MBA/MIE); Master of Social Work etc., For all these programs UofH is offering the joint degree. However, it is necessary to apply separately and meet admission criterial. For example, students must take both the GMAT and GRE tests. Prof. Dr. Venkat interested in working at Department of Mechanical Engineering, SIT. However, they need University approval and further discussion are started with register, UofH. We both agree to start the MoU process immediately to exchange the students within 3 to 6 moths, which is the pathway to the JD/DD programs.

September 2016, I had also met Prof. Dr. Philippe, University of Liege and discussed especially on JD/DD programs. Note that, University of Liege is most attractive place for the JD programs since the university has been working to build an international role itself through the development of JD programs with partners. Based on high quality mobility, the university has been developing their JD programs. Up to date, they made JD programs through the Europe. As for the Prof. Dr. Philippe, they started JD/DD programs in several departments at University of Liege. At the moment, several departments in University of LIEGE is offering will offer the DD programs. For example, Master in Engineering Sciences, Master in Architecture Engineering, Master in Civil Engineering, Master in Bio-Engineering, Master in Management, Master in Business Engineering, Master in Space Sciences, Master in Environmental Engineering, Master in Sociology, Master in French, Romance Languages and Literature, etc., with several universities include the Cranfield University (UK), University of Bolobna (Italy), Hohenheim University (Germany), Universitat Pompeu Fabra Barcelona (Spain), Sherbrooke University (Quebec-Canada), etc., Further, I had also discussed JD/DD programs with Prof. Dr. Jacques, France, Prof. Dr. Balu, USA, Prof. Dr. Werfel Germany etc., Most of them were interested in Research Collaborations from short-term to long-term. Most of the universities were not offering the JD programs. However, it seems DD programs are quite popular in Master or Doctoral Programs.

Indian Institute of Technology Madras (IITM), Madras, has strong exchange program with Germany and other European universities where students are regularly exchanged. We can think of a similar mechanism with our university where regular exchange of students becomes possible and then JD programs can be envisaged. We had established the strong collaboration with Indian Institute of Technology Madras, with Dean, Prof. Dr. Nagarajan, and Prof. Dr. Ramachandra Rao, Head Department of Physics. Recent days, we had discussed the JD/DD programs and implementation process with IITM and SIT graduate school. Note that we are already working with them for special MoU for JD/DD programs. For the first stage, in this academic year we will start the JD program for the PhD level. In the next stage, we will study how the students get specific credits from the foreign institution to obtain the degree, especially Master level. We then look for the participating departments, and see how to set up of the common curriculum, and the design of the program which might fit to the curriculum of SIT graduate school. In the program,
the nomination of the professors from both institutions will be the key, since, they will act as the examination board with the right and responsibility to look after the master or PhD thesis and finalize the final credits. Note that as for the Dean, IITM interest, they are planning to start joint Doctoral programs followed by Joint Master programs between IITM with our SIT. The President Prof. Dr. M. Murakami Sensei, has been encouraging for the last 6 years, all students and staff to go abroad under the GHRD and Top Global University projects, Govt. of Japan and other SIT programs and this has also strengthened cooperation between the partners. This will be very important to improve the strengthening research collaborations, advancing internationalization, raising international outlook, attracting the international students etc., However, in SIT the main problem is teaching through the medium of English, since most of the courses teach in Japanese. Recent year SIT started 100% English teaching courses to attract the international students and implement the JD/DD programs at SIT.


The implementation of the DD/JD programs is foreseen at SIT in the beginning of the next academic year 2017-2018. The proposed project will contribute to establish the DD/JD new education model at SIT, which will be very useful for global perspectives and will improve quality of education in SIT.

The following points should be considered and established in the 2nd stage of the DD/JD educational model at SIT to start smoothly FY 2017-2018.

a) Application for the MoU related to the JD/DD programs. Collection of all signed Memoranda of Understanding with partner institutions/universities
b) Establishment of the administrative support and responsibilities, establishment of the degree programs, curriculum, course structure, evaluation, etc., with help of administrative support will run smoothly and quickly
c) Establishment of the academic support and responsibilities. For implementing the JD/DD programs in each department, it is important to nominate the persons in charge of each JD/DD program. They will actively participate in bringing the JD/DD program to success.
d) Allocation of sufficient funds
Special scholarships for the DD/JD program (JASSO, Special SIT grants, etc.,)
f) Planning for the meetings and discussing the goals and challenges
This can be accomplished by regular meetings, SKYPE conferences, e-mail corresponding etc.
g) Language support (especially in non-English speaking countries), visiting the non-English speaking countries, more discussions with partners are crucial, since, during the students stay everything should run smoothly without any problem.

7. Conclusion

The Top Global University (TGU), Govt. of Japan Project motivated for developing the joint degree and dual degree model at SIT. Up to date the available details of both JD and DD programs in various top institutions in worldwide indicated that a future trend will be towards the establishment of institutional partnerships will be crucial and attract the current landscape of international higher education and their popularity with students and staff, join hands to create multiple way student exchanges. Further it will allow the innovative, cooperative, cross-border study programs by sense of joint ownership, mutual commitment and high level of interaction between the partners. To success the JD/DD program model at SIT, we revisited specific institutions in USA, Europe, Asia, etc., and met specific experts in this field and discussed specially the ranking, location, field of interest, language, financial support etc., In the second stage of the project, we will closely move to recruit the students in this program in our SIT partners as well as new partners. To meet the current world challenges and demands students must be trained in high concentration in professional fields, divers environment for the future world sustainability, in which collaborative degree programs will play crucial role.

References


Biography:

Prof. Muralidhar Miryala, PhD
Deputy President, Shibaura Institute of Technology

Muralidhar Miryala had received Ph.D degree in High $T_c$ Superconductivity from Osmania University, Hyderabad, India, in 1993. Afterwards (1994-1995), he had worked as a lecturer and principal investigator in a young-scientist project. Subsequently, he joined a superconductivity research laboratory (SRL), ISTEC as a research scientist and worked for 13 years. He developed a new class of mixed LRE-123 system which can be used up to 15 T at 77 K and high temperatures up to 90.2 K. Further, he also contributed to develop technology for the development of DC Superconducting Cable for Railway system applications. He is an author and co-author for more than 350 publications in international journals. He holds several Japanese national and international patents. Awards: Young Scientist Project Award, DST-Govt. of India (1995), Director’s Award, SRL-ISTEC (1998 and 2003), 1999 PASREG Award of Excellence (1999), Best Presentation Award at the IWCC11 (2003), Best Researcher Award, ISTEC-SRL (2007 and 2008), Best Researcher Award, Railway Technical Research Institute (2012), Amity Global Academic Excellence Award (2017). Now he is working at Shibaura Institute of Technology as a Deputy President and Professor.

Prof. Masahiro Inoue, PhD
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Masahiro Inoue received his B.S. and M.S. degree in Pure and Applied Physics from Waseda University and Ph.D. degree in Computer Science from Shizuoka University. He was engaged in research and development at Mitsubishi Electric Corporation. During 1990-1991, he was a visiting research scientist at the University of Michigan. Since 2005, he has been a professor of College of Systems Engineering and Science, Shibaura Institute of Technology (SIT). His field of research includes Internet of Things (IoT), embedded system, communication network, systems engineering, engineering education and project management. He holds 73 Japanese and 3 international patents. He received the Engineering Education Award (book), the Japanese Society of Engineering Education Award (achievement), and the Japanese Society of Engineering Education Award (thesis). He is a Professional Engineer in Japan and a Project Management Professional (PMP).

Prof. Takashi Komeda, PhD
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Takashi Komeda was born 1955, graduated Department of Precision Engineering, Faculty of Engineering, Shizuoka University in 1979. He worked on Suzuki motor co. as a production engineer and joined the University of Tokyo as a research assistant at 1984. He has joined Shibaura Institute of Technology from 1987, he has been a full professor since 1997 and vice president from 2009. His research field is mechatronics for medical and rehabilitation application.

Prof. Masato Murakami, PhD
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Murakami received Doctor's Degree of Engineering from Tokyo University in 1984. He joined Nippon Steel Corporation as a research scientist in 1984. He became Division Director of Superconductivity Research Laboratory in 1994. He was appointed as Professor of Materials Science and Engineering at Shibaura Institute of Technology in 2003. Since 2012 he has been President. His major research field is superconductivity and its applications and his research produced over 1500 scientific papers and 150 patents. He was awarded 1990 Nikkei prize for new technology, 1991 World Congress Superconductivity Award of Excellence, and 2003 PASREG special award. He is a fellow of the Institute of Physics. He served as principal editors of various international journals including SUST, JAAP, and JRE. He gave more than fifty plenary and invited talks at major international conferences.