Faculty Conclave 2016 – Call for papers

BVBCET took a new direction in academic reforms by embracing outcomes based education paradigm after the grant of autonomy. Since then, several experiments are being conducted on the campus in the areas of pedagogic practices, curriculum design, teaching – learning, assessment, research and entrepreneurship. All of you are innovating in these areas and enriching the engineering education ecosystem of the campus. Today BVBCET stands out as a leader on the strengths of its clear vision, sustained processes and practices and has become – "KLE Tech".

Faculty Conclave – the annual event provides a forum for the faculty members to showcase their innovative experiments and share the experiences. The previous faculty conclaves are a success in terms of the enthusiastic participation of many and were able to inspire several others.

The sixth in the series – **"Faculty Conclave 2016"** – is scheduled during **July 27-28, 2016**. This conclave is expected to provide a platform for the faculty members to exchange their thoughts and share their experiences in academic space. The broad areas of focus are:

1.Curriculum Innovation	**2. Outcomes Assessment**
3.Experiential Learning – Open ended experiments, projects, field visits	**4.Pedagogies in Engineering Education**
5.Research Experiences, Entrepreneurship and Industry – Institute Collaboration	**6. Graduate Program Experiences (MTech)**
7.Technology Enhanced Learning & MOOC Experiences	

Faculty members are invited to share their ideas and experiences of the academic year 2015-2016 in the form of papers to be presented during the conclave. The papers can be submitted by an individual or a group. Extended Abstracts of the papers (pdf only) not exceeding 500 words may be mailed to facultyconclave@bvb.edu clearly writing focus area in subject line of email, choosing from the table above**. The abstract of the paper is expected to indicate the focus of the paper in terms of clearly stated objectives, methodology and measures used along with the inferences drawn.** Outcome of the review of abstracts will be communicated to the respective author(s) by 27-06-2015. Full papers of the accepted abstracts, not exceeding 05 pages, in IEEE format, may be sent by latest 11-07-2015. The authors of selected papers will be making their presentation during the faculty conclave.

Important Dates

1.Submission of Abstracts 11-06-2016	**4.Communication of Paper Review 16-07-2016**
2. Abstract Acceptance Communication 20-06-2016	**5.Submission of final paper 23-07-2016**
3.Submission of full Papers 09-07-2016	**6.Faculty Conclave 27-07-2015 and 28-07-2016**

Director, CEER

Schedule for Faculty Conclave-2016, July 27-28th, 2016

DAY 1: 27-July-2016	SESSION 1	Time: 9.30 am to 11.15 am

Venue: BioTech Auditorium

Sl. No	Paper-ID	Title	Authors
1	**BT02**	Theme-based Integrated Project Implementation for Basic Skill-set Development in Biotechnology	L.R.Patil, Sharanappa A , B.S.Hungund, V.S. Hombalimath, Zabin Bagewadi, Anil Shet, Gururaj Tennalli, Deepak Yaraguppi, and S.V. Desai.
2	**CS05**	Packet Tracer Simulation Tool as Pedagogy to Enhance Learning of Computer Network Concepts	Vijayalakshmi M., Padmashree Desai, Meenaxi M. Raikar
3	**CS07**	Design Thinking Framework to Enhance Object Oriented Design and Problem Analysis Skill in Java Programming Laboratory: An Experience	K.M.M Rajashekharaiah , Manjula Pawar , Mahesh S Patil, Nagratna Kulenavar , Dr. G H Joshi
4	**CS08**	Preferential Theme Matrix for Minor Project	Sujatha C, Jayalaxmi G.N, Vijaykumar B, M M Raikar, Suvarna G.K, Karibasappa G.K and S.G Totad
5	**MD04**	Engineering Profession-Freshman Perspective	Nitya N Kulkarni, Kaushik M, Gopalkrishna Joshi
Tea Break from 11.15 to 11.30 am			

Schedule for Faculty Conclave-2016, July 27-28th, 2016

DAY 1: 27-July-2016	SESSION 2	Time: 11.30 am to 1.00 pm

Venue: BioTech Auditorium

Sl. No	Paper-ID	Title	Authors
1	**CS09**	Building Software Resources for In-house Processes through Projects	Jayalaxmi G.N, Sujatha C, Vijaykumar B and Shilpa Y
2	**CS11**	Building software testing skills in undergraduate students using Spiral Model Approach	Gopalkrishna Joshi, Padmashree Desai
3	**IT05**	Integrated Learning Experience: Engineering Solution Using Design Course Concepts	Shraddha H, R M Shet, Sujata N, Subhas M, Sanjay E, Prashanth A, Shivshankar, Shrishail P, Sachin A, Kiran P, Nalini C, A B Raju, Uma M
4	**MD02**	Data analysis with R Programming: An Innovative Approach	Dr. Gururaj Bhadri , Preeti. T, Goura Koti, Archana T
5	**MD08**	Picture pieces activity: An effective team building strategy	Rohith Hallur, Preeti S. Pillai, Gopalkrishna Joshi
Lunch Break: 1.00 to 2.00 pm			

Schedule for Faculty Conclave-2016, July 27-28th, 2016

Note: Afternoon sessions (post lunch) will run in parallel in BioTech Auditorium and BioTech Seminar Hall

DAY 1: 27-July-2016	SESSION 3A	Time: 2.00 to 3.45 pm
Venue: BioTech Auditorium (Circuit Branches)		

Sl. No	Paper-ID	Title	Authors
1	**CS06**	Rubrics based continuous assessment for effective learning of Digital Electronics laboratory course	Aruna S.Nayak, Umadevi F.M.,Preeti T
2	**CS10**	Enhancing Research Proficiency in Postgraduate Engineering Students	Jayalaxmi G N and V P Baligar
3	**EC01**	Open Ended Approach to Empirical Learning of IOT with Raspberry Pi in Modeling and Simulation Lab	Uma Mudengudi, Soumya S Patil, Supriya Katwe
4	**EE03**	Enhancement of Student Learning in Digital Signal Processing Course by Implementing on Hardware Platform	Leah S. Joshi
5	**MCA02**	User Interface Design – Learning by Reflection	Deepa Mulimani, S.V.Seeri, P.R.Patil, Sujata Kulkarni
Tea Break from 3.45 to 4.00 pm			

Schedule for Faculty Conclave-2016, July 27-28th, 2016

DAY 1: 27-July-2016	SESSION 4A	Time: 4.00 to 5.30 pm
Venue: BioTech Auditorium (Circuit Branches)		

Sl. No	Paper-ID	Title	Authors
1	**CS02**	Integrating Class and Laboratory with hands-on programming, its benefits and challenges	Vishwanath G.G. Mahesh P., Vidya H., Priyadarshini D.K., Nagaratna Y., Preeti B., Praveenraj P., Deepak M.
2	**EE02**	Enhancing the Controller Design skills in the course Linear Control Systems	Javeed Kittur
3	**IS02**	Cooperative learning: The impact of Online Tools and Technologies in Computer Architecture Course	Indira Bidari, Satyadhyan Chickerur
4	**IT03**	Effective Learning in Electronic Measurements and Instrumentation Course through hands-on	Jyoti P, Nikita P, Nalini C. Iyer
5	**MCA03**	C++ Teaching Using Real Life Example around a Class as a Core	DeepaMulimani, S.V.Seeri, ShashikalaBudni, P.R.Patil

Schedule for Faculty Conclave-2016, July 27-28th, 2016

Note: Afternoon sessions (post lunch) will run in parallel in BioTech Auditorium and BioTech Seminar Hall

DAY 1: 27-July-2016	SESSION 3B	Time: 2.00 to 3.45 pm

Venue: BioTech Seminar Hall (Non-Circuit Branches)

Sl. No	Paper-ID	Title	Authors
1	**IP02**	Enhancing constructive learning by integrating theory and practise.	Prasanna Raravi , Madhusudhana H K , Vinayak Kulkarni
2	**IP03**	Integrated learning experience through open ended activity in metrology & quality engineering lab	Vijayakumar, V.N.Gaitonde , H.K. Praveen Kumar , A.R. Lakkundi, B.S.Kakol
3	**MB01**	Blended-Learning as a Tool for Better Learning	Mr. Nagaraj R Navalgund, Dr. S.V.Patil
4	**ME08**	Tinkering to Fabricating-Developing basic skills of fabrication in Freshman	Sanjeev M. Kavale, Adarsh Patil, Mantesh Choukimath, Basanagouda Shivalli
5	**PHY01**	Curriculum Design in Engineering Physics: An Experience	V.H Choudapur , S.B.Kapatkar , Nalini Iyer , Uma Mudengudi , B.B.Kottursheettar, Ashok Shettar
Tea Break from 3.45 to 4.00 pm			

Schedule for Faculty Conclave-2016, July 27-28th, 2016

DAY 1: 27-July-2016	SESSION 4B	Time: 4.00 to 5.30 pm

Venue: BioTech Seminar Hall (Non-Circuit Branches)

Sl. No	Paper-ID	Title	Authors
1	**IP01**	Framework for Measuring the Attainment of Major Competencies in Programme Specific Outcome (PSO) of Industrial and Production Engineering Programme	Sanjay V Kulkarni , Vinayak N Kulkarni , Jangali Satish G
2	**MD03**	Transitional Learning Style Preferences and Its Factors in Newer Generation Engineering Students	Kaushik M, Gopalkrishna Joshi
3	**ME02**	Learning Enhancement in Mini-Project through Effective Assessment	G.U. Raju, R. Savadi, Arun Patil, G. M Hiremath, Shrishail M. L.
4	**ME06**	Enhancing Student Learning in an Interactive Classroom Environment	Basanagouda Shivalli
5	**ME10**	Use of Computer tools, Experimental Videos and low budget experiments in teaching Fracture Mechanics	Krishnaraja G. Kodancha

Schedule for Faculty Conclave-2016, July 27-28th, 2016

DAY 2: 28-July-2016	SESSION 1	Time: 9.30 am to 11.15 am

Venue: BioTech Auditorium

Sl. No	Paper-ID	Title	Authors
1	**CS01**	Collaborative Project Based Learning Through Software Engineering Web Technology and DBMS courses	Vishwanath P. Baligar, Karibasappa K. G.
2	**CS04**	Active learning explored in Open elective course: Internet of Things (IoT)	Meenaxi M Raikar, Padmashree Desai, Jayalaxmi G N
3	**IT04**	Experiential Learning: Learning Through Projects	Nagaraj Vannal , Satish Chikkamath , R M Shet , P C Nissimgoudar, Nalini C Iyer
4	**MD09**	Promoting Ethical skills in first year engineering students through socially relevant experiments	Yogesh P. Velankar, Gopalkrishna H. Joshi and Preethi A. Baligar
5	**ME01**	Enhancing Design Capability Through Exclusive Teaching In Machine Tool Design For UG Students	U.P.Hosmani, Shivaprasad Mukhandmath, G .R. Chalageri
Tea Break from 11.15 to 11.30 am			

Schedule for Faculty Conclave-2016, July 27-28th, 2016

DAY 2: 28-July-2016	SESSION 2	Time: 11.30 am to 1.00 pm
Venue: BioTech Auditorium		

Sl. No	Paper-ID	Title	Authors
1	**AU01**	Implementation of Advanced Product Quality Planning In Engineering Project	Aditya M. Deshpande, Siddhalingeshwar I. G., Nagaraj Ekabote
2	**IT07**	Multi module integration approach to realize course projects in Automotive-electronics	S N Asundi, Mane
3	**MD05**	Project Clinic: An approach to project mentoring	Raghuraja Adi , Shraddha G. Revankar, Gopalkrishna Joshi , Preethi Baligar
4	**ME11**	Enhancing Research Skills in CAE Lab: Incorporating realistic problems and Technical publications	Arun Y. Patil, Shivanandagouda R. Patil, Santosh Billur,Sridhar M , Dr. Krishnaraja G Kodancha
5	**MD10**	Engineering Exploration-A Course Design Experience	Team CEER

Faculty Conclave 2015-2016

Attendance Sheet

Sl No	Faculty Name	Attendance	
		Day 1	Day 2
1.	Dr. V.P.Baligar	V.P.Baligar	V.P.Baligar
2.	Dr. S.R.Chickerur	S.R.Chickerur	S.R.Chikkerur
3.	Dr P S Hiremath	P.S.Hiremath	P.S.Hiremath
4.	Sri. P.R.Patil	P.R.Patil	P.R.Patil
5.	Smt. Jayalaxmi G N	JGN	JGN
6.	Smt. Vidya Handur	V.Handoor	V.Handoor
7.	Sri. Mahesh Patil	MPatil	MPatil
8.	Sri. Deepak Kumar Mehta	DKMehta	DKMehta
9.	Sri. Vishwanath Garagad	VG	VG
10.	Dr Sanjay Kotabagi	SKotabagi	SKotabagi
11.	Dr K G Kodancha	KGKodancha	KGKodancha
12.	Sri. C.M. Koti	CMK	CMK
13.	Dr G U Raju	G.U.Raju	G.U.Raju
14.	Sri. Shreeshail M L	ShreeshailML	ShreeshailML
15.	Sri. G.M.Hiremath	GMHiremath	GMHiremath
16.	Sri. Sudhir Pawaskar	SPawaskar	SPawaskar
17.	Sri. Vinayak Kulkarni	VKulkarni	VKulkarni
18.	Sri. R.S.Hosamath	RSHosamath	RSHosamath
19.	Sri. Girish Chalageri	GChalageri	GChalageri
20.	Sri. Sanjeev Kavale	SK	SK
21.	Dr. Saroja V Siddamal	SiddamalS	SiddamalS
22.	Smt. Sujata Kotabagi	Sujata K.	Sujata K
23.	Sri. Anand K Chandrashekhar	AKC	AKC
24.	Mr. Shivshankar Huddar	SHuddar	SHuddar
25.	Ms. Sneha V Meti	SnehaMeti	SnehaMeti
26.	Sri. Sanjay Eligar	SanjayE	SanjayE
27.	Smt. Preeti Pillai	Preeti Pillai	Preeti Pillai
28.	Sri. Vasanth Reddy G	—ABSENT—	VReddy
29.	Sri. GurunathKampli	GKampli	GKampli

30.	Smt. PremaMalali	Prema M	Prema M
31.	Ms. Leah S Joshi	Leahjoshi	Leahjoshi
32.	Sri. Kiran R Patil	K.R.Patil	ABSENT
33.	Sri. Javeed Kittur	Kittur.	Kittur
34.	Ms. Bharathi Shettar	Shettar	Shettar
35.	Sri. Ashok Chikkaraddi		
36.	Dr S S Desai	Desai	Desai
37.	Dr. Vimala Swamy		
38.	Ms. Rohini Malagi		
39.	Sri. H.S.Patil	H.S.P	
40.	Sri. M.M.Dandin	MMD	
41.	Sri. Abhishek Patil		
42.	Dr S V Patil	SVPatil	SVPatil
43.	Sri. Nitin G Kulkarni		
44.	Sri. Sagar B Patil		
45.	Sri. Nagaraj Navalgund	NNavalgund	NNavalgund
46.	Sri. Jayant M Alagawadi		
47.	Smt. Soumya B Kudagi	-ABSENT-	-ABSENT-
48.	Dr.Uma Neeli	Uma	Uma
49.	Smt. Sumedha S Shinde		
50.	Sri. Roshankumar Arya		
51.	Dr. G.N.Bhadri	G.N.Bhadri	G.N.Bhadri
52.	Dr. Narayan Swamy		
53.	Smt. S.V.Chougala		
54.	Dr. A. S. Bennal		
55.	Smt. V.H. Choudapur	ASBennal	ASBennal
56.	Smt. V.V.Koppal	VVK	VVK
57.	Smt. S. B. Kolvekar	SBK	SBK
58.	Sri. G. V. Muddapur	G.V.Muddapur	G.V.Muddapur
59.	SRI. SUDHIR HIREMATH	Sudhir	Sudhir
60.	Dr. A.M.Sajjan	Sajjan	Sajjan
61.	Dr. C.C. Hadimani	-ABSENT-	
62.	SMT. P Ramadevi	Ram	Rama
63.	SMT. S. Dhanalaxmi	Dhan	Dhan
64.	Sri. S.R. Kurundawade	Sandeep	Sandeep

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65.	Ms. Jayanti D Shinge	Jayanti	Jayanti
66.	Smt. Anusha Kodolli	Anusha.	Anusha.
67.	SMT. PREETI BALIGAR	PBaligar	PBaligar
68.	MS. SHRADDHA G REVANKAR	Shraddha	Shraddha
69.	SRI. RAGHURAJA ADI	RAdi	RAdi
70.	SRI. ROHITH HALLUR	Rohit.	Rohit
71.	SRI. PRAVEEN H J	Praveen HJ	Praveen HJ
72.	DR. M .V.ATRE	Atre	Atre
73.	PROF. A.K. KULKARNI	AKK	AKK

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Faculty Conclave
2015-2016

Date: July 27-28, 2016

Proceedings of Abstracts

Centre for Engineering Education Research
KLE Technological University, Hubballi, 580031

Contents

**Some abstracts maybe missing from this list as they were included as their review was pending and the proceedings was made*

AU01- advanced product quality planning in Automobile engineering projects

Aditya M. Deshpande, Siddhalingeshwar I. G., Nagaraj Ekabote
Department of Automobile Engineering, BVBCET, Hubli
aditya@bvb.edu

Abstract

The students of Department of Automobile Engineering currently base their project work development on Engineering Design (ED) principles. ED is proven to enhance the learning capabilities of students as well as a connector between different processes necessary for. Though efficient in addressing the academic requirements, it is nevertheless open ended and hence the methodology for project execution will differ from team to team. Moreover every automotive company has developed its own or follows a project development methodology which is very different from what our students execute in their engineering projects.

The need for a defined industrial methodology based on Engineering Design, especially to address the needs of higher semester automobile engineering students, prompted the authors to experiment with the implementation of Advanced Product Quality Planning (APQP) for automotive engineering project development.

APQP is a framework of procedures and techniques followed by the automotive industry worldwide. This was developed by General Motors, Chrysler and Ford to have a common product development platform and to share results between stakeholders.

The initial foray into implementation of APQP was through a project titled Solar Array Electric Vehicle in 2014-15. Buoyed by the successful implementation and feedback received from students, the authors implemented the same in two additional projects from SAE India, namely e-Baja and Supra.

Four stages were chosen for implementation in the project: Plan and Define Program, Product Design and Development, Process Design and Development and Product and Process Validation. This paper highlights the scope, implementation methodology and results of application of APQP in the projects mentioned above.

Key words: APQP, Automobile Engineering, Projects, Solar Array Electric Vehicle, SAE India, e-Baja, Supra.

BT-02 Theme-based Integrated Project Implementation for Basic Skill-set Development in Biotechnology

L.R.Patil, Sharanappa A , B.S.Hungund, V.S. Hombalimath, Zabin Bagewadi, Anil Shet, Gururaj Tennalli, Deepak Yaraguppi, and S.V. Desai.

Abstract

Biotechnology being an inter-disciplinary *domain*, demands an adequate theoretical knowledge of allied subjects along with good hands-on skill-sets for the graduates to be industry-ready. In this context, specific theme-based mini and minor academic projects for V and VI semester respectively were designed and implemented for under-graduate students of Biotechnology. The objectives of the mini project were 1).To equip the students with basic skill-sets needed for executing the academic projects with minimal hand-holding, orient them to meet professional requirements and impart the culture of Good Laboratory Practices (GLP), and Standard Operating Procedures (SOP)of analytical instruments, together which account for practices with personal safety measures and 2).to impart basic microbiological and biochemical skill-sets. The objectives of minor project was to educate the students with basic fermentation process at laboratory level and statistical analysis of the results. The project themes were designed by taking the inputs from the industry stake-holders based on their need and skill-gap identified. The mini project was undertaken with the theme of "Isolation, Screening and Preliminary Characterization of Microorganisms Producing Selected Industrially Important Metabolites". It comprised of two phases. In the first phase, orientation of SOP & GLP of the basic equipments along with the hands-on training on individual basis, biochemical calculations and Package of Practices for microbiological and biochemical domains. As part of second phase, project work on isolation and characterization of microorganisms producing selected enzymes was implemented. In continuation of the mini project, the minor project for VI semester was implemented with the theme "Submerged Fermentation and Optimization of Process Parameters for Production of Industrially important Biomolecules". The effect of various parameters at different chosen levels on biomass, substrate and product concentrations was studied. Basic statistical analysis of the results was made to perform for effective understanding of statistical concepts. A formal training for drafting the technical report was undertaken for honing the written skills. A multi-level rubrics based assessment (demonstration, written and oral) was followed to measure the extent of learning. Both the projects together addressed the Graduate attributes 2,4,5,9,10 and 13. A well-planned time-bound schedule and resource management system was kept in place for hassle-free implementation of the

projects. A formal feed-back for mini and minor projects was taken wherein the students expressed their satisfaction in terms of skill-set enhancement and individual learning. It is concluded that the theme-based design, delivery and assessment of the two academic projects was effective in experiential learning for the students which plays a key role in subsequent project handling and quality improvement leading bridging the gap between industry and academia. It is envisaged to implement the second cycle with further scope of improvement by including industry professionals for assessment.
Keywords: Skill-sets, SOP, GLP.
Broad area of article- Experiential learning

CS01 DEVELOPMENT OF DYNAMIC E-COMMERCE WEBSITES THROUGH SOFTWARE ENGINEERING AND WEB TECHNOLOGY COURSES

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Abstract

This paper shares the experience of teaching Software Engineering and Web Technology courses for first semester students of MTech, Computer Science and Engineering. The total number of students registered for these two courses were 23. The students should know the principles of Software Engineering and latest trends about Web Technology in depth. By making the students to develop E-Commerce Websites in a professional way, both the courses were taught in depth. Twelve teams were made out of 23 students and each team was given the responsibility of developing a dynamic E-Commerce websites. The students were able to launch their own website; the website address is http://kletumtechcse.com All the projects were put on this website. Some of them are real homes for real estate business, flower shop for flower business, be stylish for selling wearables and so on. One can experience the capabilities of the websites by visiting above mentioned website. It is observed that the students were happy to learn Software Engineering by actually developing the software instead of gaining only the theoretical knowledge. Also the students used the latest web technology tools and adopted them while developing the software. The students developed 10 Applications by following the Software Engineering Processes and IEEE/ACM standards in a professional way. Some of the web technologies used by the students are HTML5, CSS3, JQuery, Python, PHP, MySql, XML and JSON. The result obtained in both the subject is 100%. Key words: Web Technology, Software Engineering, IEEE Standards

CS02 - Title : Integrating Class and Laboratory with hands-on programming, its benefits and challenges

Authors : Vishwanath G.G. Mahesh P., Vidya H., Priyadarshini D.K., Nagaratna Y., Preeti B.,Praveenraj P., Deepak M.
Dept of Computer Science & Engineering

Abstract:
Programming and problem solving skills are essential for undergraduate students as a part of their education. The traditional approach of teaching programming courses is teacher's centric, where the students are passive learners. There is a need of transformation in teaching so that the students participate actively. The paper focuses on an attempt made to integrate classroom and laboratory for first year introductory programming course Programming in C. The traditional teaching approach of the course consisted of weekly four lectures and one weekly laboratory session of 3 hours duration. In the laboratory session the students were expected to either practice the problems or implement few assignments based on the conceptual understanding in the classroom. At the end of the semester there was a written exam and a laboratory exam to test the skills. In the proposed approach of integrating classroom with laboratory consisted of two sessions per week each of 180 minutes duration. Each session involved delivery of content by the course instructor using power point presentations, demonstration of examples, hands-on learning, and practice problems.
Teaching programming concepts with hands-on made the students to involve in learning completely. The number of students for each instructor was limited and hence there was good amount of interaction with the instructors. Other activities like quizzes, term works, debugging, code optimization, refactoring were conducted so as to test the problem solving and programming skills. The paper also discusses the benefits and challenges of learning programming with hands-on. The performance of students in current approach is compared with traditional one. The results show that there is increase in number of students scoring higher grades. There is slight improvement in average but however standard deviation is slightly high. This paper concludes with challenges faced in this case study. In this case study, the number of credits for course was reduced from 7 to 3 as L-T-P :0-0-3. But the syllabus was not compromised. Also hands-on sessions consumed more time than traditional teaching. Due to these reasons extra classes are conducted to cover-up the syllabus. This raises the questions regarding planning and implementing of hands-on sessions.

Once course designers and teachers experience and develop thorough understanding of hands-on programming science, they can plan to upgrade the course with studio based learning.
Index terms: Hands-on, teacher's centric, student's centric, benefits, challenges, integrating laboratory and classroom

CS04 Active learning explored in Open elective course: Internet of Things (IoT)

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School of Computing, KLE Technological University, Hubli

Abstract-The objectives of the elective courses are to provide flexibility and opportunities to explore career possibilities, to gain experience in aspects of engineering beyond the core curriculum, and to study certain areas in greater depth. Knowledge, skills are further developed in a self-directed choice of area across the curriculum. It brings interdisciplinary education in students which help them to understand the roles of different disciplines in the system development. Open electives are offered by particular branch/discipline to other branche/discipline students in third/fourth year of engineering curriculum. Internet of Things (IoT) is an open elective course offered at eighth semester in Computer Science & Engineering curriculum which can be taken by any branch students. The first challenge in offering this course is identifying the content of the course, at what level the course need to be introduced , hardware and software components involved in IoT. Second challenge is involving students in learning process as it is not only theory based and different knowledge level students are part of this course. To address these challenges we used activity based approach for teaching and learning this course. The different areas chosen as a part of the activity based learning are database component for IoT, web designing, mobile app, pushing the data captured from the sensor to the cloud and the analysis of the sensor data. Various real-world problems are identified, and assigned to different teams consisting of four students. The activity is carried out in four phases: assembling of the actuators with the IoT devices (Arduino, Intel Galileo and Raspberry Pi are used), connecting the things to the internet, uploading the learning in the form of video to the internet and report writing. The students are given option to either summarize the IoT system designed in a form of paper or build a web interface using python web development Django framework which is a part of the third unit in the course syllabus. Rubrics based assessment is followed to evaluate the activity. The outcome of this is some of the interdisciplinary systems developed by teams such as Smart parking, home intrusion detection, weather reporting bot, air pollution monitoring, etc.

The activity based learning enabled the students to explore the current trends and technology in the market, explore the possible options in choosing the sensors and learn the interfacing of the hardware (Things) to the software

(Internet). The author's observations indicate that the activity based learning addresses program outcomes 3, 5 and 12 of the graduate attributes. The average attainment of the mentioned program outcomes is 78.43% for the course in continuous internal assessment.

Keywords: Arduino, smart parking, Django framework, actuators

CS05 Packet Tracer Simulation Tool as Pedagogy to Enhance Learning of Computer Network Concepts

Vijayalakshmi M. Padmashree Desai Meenaxi M. Raikar
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Abstract –The technological rebellion has made current generations to depend more on the digital world in their day to day life. The effectiveness of the digital world has changed the learner's perceptive towards the education system. The impulsive growth of technology has increased the popularity of Information and Communication Technology. Computer network is as an important course in the curriculum of Computer Science and Engineering, which helps to develop the Communication and Information Sharing. The upcoming trend in the education technologies has also increased the necessity of pedagogical practices in Engineering Education. It is always a challenge to teach Computer Networks course to students as the course requires a practical exposure more than the chalk and talk. It is very hard for students to envision the concepts of computer networks, protocols formats and understanding packets flow during teaching in classroom. This paper discusses the effective use of a Packet Tracer (PT) simulation tool in the teaching of computer network concepts. A structured learning approach is introduced by using packet tracer tool in teaching network concepts and series of exercises are designed and developed to give the visualization of each layer functionality. These practical exercises helped in active learning to use the packet tracer to simulate campus network which encouraged the students' to build the clarity on the physical devices like router access points, switch and their configurations. The troubleshooting skills were practiced by introducing the errors deliberately and how to resolve is learnt through the tool. Computer network simulation activity include the concepts of NAT, Subnetting, V-LAN setting, services of TCP/UDP, Packet format details, application layer protocol like DNS, DHCP,E-Mail,FTP and HTTP. Activity is evaluated through students' presentation and followed by quiz on the concepts taught.

The introduction of simulation tool has shown significant improvement in the students learning which is observed through the demonstration of the activity and also in written examinations.

CS06 Rubrics based continuous assessment for effective learning of Digital

Electronics laboratory course

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Abstract- Today's world lays more emphasis on embedded product design which necessitates the inclusion of hardware courses like Digital Electronics, Computer Organization and Microcontrollers in the curriculum for undergraduate program in Computer Science. These pre-requisite courses introduced in the lower semesters pave the way for students to develop keen interest, skill and proficiency in the area of Embedded system design. But students of Computer Science generally lack interest in hardware related courses, a fact which has been observed time and again by teachers handling these courses. Therefore the challenges that lay before the course instructors was to make the students take interest in these courses and also to make them industry ready so as to compete with peers from other engineering branches in the domain of Embedded Systems. After much debate and discussion, amongst all stake holders, it was decided to apply structured enquiry based learning strategy. Structured enquiry is a form of pedagogical practice that facilitates students' to build on previous learning and provide a strong foundation for further learning in relation to the objectives defined. This approach was also found to enhance the quality of teaching as a result of which students' ability to conduct investigations of technical issues consistent with their level of knowledge and understanding improved.

Here we present a set of activities, their related outcome based assessment techniques and outcome based strategies applied to the laboratory course on Digital Electronics in Computer Engineering at the III Semester level. The course was designed to consist of initially, conducting simple exercises to provide hands on experience, and use of appropriate modern engineering tools to simulate the designed circuit for the given problem statement after which it was prototyped.

Along with the regular lab experiments, student' teams were made to work on course projects which required them to design and build projects. This promoted their self-learning, improved their knowledge of digital circuit design well beyond that directly taught in lectures, improved students' creative thinking, applied logic ability and practical thinking. This paper discusses the attempts made by the course teachers to achieve these goals. The first step was to set appropriate course outcomes (COs). The subsequent step was to align the

COs to suitable Program Outcomes (POs) through relevant outcome elements (OEs) and performance indicators (PIs). Later rubrics were written to assess the attainment of each of the Program Outcomes. This activity resulted in enhanced motivational levels amongst students, increased their involvement in the team and improved their knowledge due to self learning.

Keywords: *Course project, structured enquiry, program outcomes , outcome elements, course outcomes, performance indicators, assessment rubrics.*

CS07 Design Thinking Framework to Enhance Object Oriented Design and Problem Analysis Skill in Java Programming Laboratory: An Experience

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Abstract—In Computer Science department, the students study the object oriented programming course at 4th semester and this course is associated with laboratory. After being used to a procedural style of programming, programming in an object-oriented style seems to be difficult. Programming using object oriented paradigm is essential for Computer Science under graduate because, this empowers students to solve most of large and complex business applications and knowledge of Object Oriented Programming paradigm is foundation to learn many of advanced technologies. Learning of
object oriented programming is not simply, using the syntax and semantics any particular language, it is learning of additional skills such as abstraction, encapsulation, inheritance and polymorphism, hence learning object oriented
programming is a challenging task. In addition to OOP paradigm, developing the problem analysis skill is also important where it leads to designing solution for complex problems. During analysis, the student must be able to identify classes, attributes, methods and association between the classes. The design first and then write program is another important aspect which leads to analysis and use of diagrammatic representation enhances the comprehension of object oriented concepts. The design first can be improved by using “Design Thinking Frame work”. Design thinking is a methodology that teaches individuals new strategies to solve problems. Through the process students are
able to take ownership over their learning and are able to see the relevance of the course content. Design thinking leads to solution based thinking and it builds one’s ability to creatively solve problems. The problem analysis is further extended by design thinking, where it consists of five phases Empathy (Emphasise), Define, Ideate, Prototype and Test. In this course we implemented a modified standard “Design Thinking” through structured
enquiry assessment , in our framework few phases are overlapping and it is defined using following phases—1. Define, 2. Ideate & Prototype, 3. Test.
This paper discuss how the difficulties of learning object oriented programming can be minimized by conducting a comprehensive tutorial for “Object Oriented Thinking” which builds confidence of student to learn better. Further, it

discusses how student learning, problem analysis and design can be improved through laboratory experiment categorization
and design thinking.

Key words: abstraction, polymorphism, categorization, design thinking, analysis, diagrammatic.

CS08 Preferential Theme Matrix for Minor Project

Sujatha C, Jayalaxmi G.N, Vijaykumar B, M M Raikar, Suvarna G.K, Karibasappa G.K and S.G Totad

Abstract- We propose a preferential theme matrix for selecting a problem in carrying out the minor project for 6th semester CSE students. The matrix comprise of emerging technologies, research areas and the application domains. Students have to come up with a problem which falls under these theme matrix. It included Internet of Things, cloud computing, mobility and web technology. The focused research areas were on big data & analytics and image processing. The application domains were focused on social relevance such as environment monitoring, health care, safety and security, agriculture. And an additional open choice (others) was mentioned which gave an opportunity to explore other new technologies and research areas. Broadly the phases of conducting minor project are classified as team formation, problem Identification/selection and project execution which in turn has several sub phases. In team formation students were given freedom to choose their partners with a team size of 4/5 within the same division. This phase was analyzed with respect to CGPA grades of team members, which showed a good distribution of grades within the teams and across the entire teams. In problem identification the teams discussed about theme matrix with the assigned guides and presented the project synopsis to the evaluators. After these phases the project execution which in turn included requirement specifications, design, implementation, testing and deployment. To meet some of the pre-requisites for carrying out the projects, department has organized workshops on IoT, Cloud computing and open source design tools. Motivation of self learning in students, MOOC on the relevant technologies of their projects is introduced as part of minor project. The CIE of minor project focused on the processes of software engineering and SEE was focused on product/prototype development, technical skills and external recognition. The entire process of conducting minor project met the expected goals with six wining prizes in SRISHTI state level project exhibition 2016 and few projects are accepted for E-poster presentation in international conference.

CS09 Digitization of In-house processes through projects.

Jayalaxmi G.N, Sujatha C, Vijaykumar B and Shilpa Y

The objectives of In-house projects are creation, enhancement of facilities, which are useful to people in the organization. This makes own people to involve in identifying and solving their problems. The advantages are increasing accessibility, ease maintenance and cost effective. Since our department is Computer Science and Engineering, in-house projects are focused on digitization of the few departmental processes. The identified processes for in-house projects are management of student and faculty information, the department repositories and time table generation. Some of in-house projects are developed as part of VI sem minor projects, web lab and VIII sem capstone projects using recent cutting edge technologies like HTML5, CSS 3, JQuery, PHP, Bootstrap, mySQL and cloud. The repository management project includes book records of department library, capstone/minor/mini/course project reports, lesson plans and log of SEE question papers. It provides with good GUI, multiple field search and sort options. Faculty and student information project is developed according the NBA/ISO required information. It maintains faculty profile, research activities and their administrative level responsibilities in the department. The main focus in this project is to manage research centre information. It also provides year wise results, placements and higher studies of students' information. Time table preparation is NP hard problem every year it is having new issues and as well as partial satisfactory solutions. The digitization of this process will surely leads to unbiased and much satisfactory solutions. This digitization approach will surely make people's life ease and reduce the burden of higher authorities.

CS10- Enhancing Research Proficiency in Postgraduate Engineering Students

Jayalaxmi G N and V P Baligar

Abstract—Research is born and brought up in universities and reputed institutions. The engineering education is having significant contribution towards research. Engineers will play an important role in development of technologies in all the fields and facilitate them to lay man. This happens only through research. Scientific Research is well disciplined study in order to find the solution, prove a theory or answer the particular question. Research scholars have to follow the series of steps and protocols to success in the research. One of the main goal of Postgraduate (PG) program is exploring the students to research. PG students of engineering education are from different circuit

branches and peers knowledge level is also different. So it is a big challenge for the faculties to explore the students towards research. In this article authors propose the linking of courses in the PG curriculum to focus more on research and pedagogical activities to encourage the students for doing research. Workshop conduction, Industrial visit, Presentations and Publication are the pedagogical activities practiced by the authors. The impact of these activities results in 88% of students publishing papers in international journal with impact factor 1.05.

CS11 Building software testing skills in undergraduate students using Spiral Model Approach

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Abstract- Spiral Learning aims to strengthen students' understanding of the basic concepts by revisiting the concepts periodically with different contexts and with increasing sophistication throughout the curriculum. This approach helps to overcome the limitations of the instructional design and delivery such as:

1. Concepts taught in isolation and not being emphasized in later stages of learning leading to poor appreciation of learned concepts.
2. Repetition disregarding earlier knowledge limiting the depth of treatment.

Software Testing is an important skill required for computer science and engineering professionals. It is a need from an Industry also. Software testing was taught as course in earlier curriculum of computer science and engineering. As it was taught in isolation it was difficult for to build up required skill in the students. This paper discusses the experience of authors in building software testing skills among the students of undergraduate engineering degree program in computer science and engineering. This work analyses the earlier curriculum of computer science and engineering UG program with respect to software testing skills that was practiced earlier. And the approach followed by the authors as a solution to make up for the deficiency in the earlier curriculum is also deliberated along with it's limitations. Based on this experience, authors realized the need for building software testing skills seamlessly integrating with programming, software engineering and project courses. Accordingly a spiral approach to introducing the software testing skills was attempted and the experience is shared in this paper.

Keywords : Curriculum, Spiral, Learning, Integrated, Testing, skills;

EC01-Open Ended Approach to Empirical Learning of IOT with Raspberry Pi in Modeling and Simulation Lab

Uma Mudengudi, Soumya S Patil, Supriya Katwe

Abstract:

Nowadays in most of the industries python programming language is widely used for various test automation and for IOT related applications. In order to train the students with the challenging industry needs, python is introduced for the fourth semester students in the modeling and simulation lab. Initially the language is introduced to implement numerical computation algorithms. To expose students to Raspberry Pi and its IOT applications the open ended experiment is designed to demonstrate the use of Raspberry Pi kit, to sense and retrieve the data from the cloud. With this approach the students are exposed to python programming and IOT concepts using Raspberry Pi. This exercise helps students to carry out higher semester projects in IOT based applications in a better way.

Key words: modeling and simulation lab, IOT, Raspberry Pi

EE02- Enhancing the Controller Design skills in the course Linear Control Systems

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Abstract – Controller design is very essential and critical in any control systems. In order to make a system function as desired it is required to design the controller parameters appropriately and then use it in the control system. In this paper an attempt is made in enhancing the controller design skills in the course Linear Control Systems through assignments. The assignment
involves design of controller parameters and its verification using simulation. Proportional - Integral (PI) controllers and Proportional – Integral – Derivative (PID) controllers are considered in the assignment questions. Zeigler – Nichols tuning method is used to design the controller parameters and these controller parameters are plugged in the controller and the system as a whole is simulated in SCILAB simulation tool for the verification of the controller design. The assessment of the assignment questions is done using rubrics. Four parameters problem analysis, controller parameter design, simulation tool usage and documentation were assessed. Out of all the four parameters which were being assessed, simulation is the parameter with the highest attainment of 89.47%. Following this the parameter analysis attainment is 86.17% and that of parameter design is 80.7%. The parameter documentation's attainment is the least with 74.34%. The result of assessment shows a good percentage attainment of the design outcome.

EE03 Enhancing Learning in Digital Signal Processing by Implementing on Hardware Platform

Leah S. Joshi

Abstract- We all know that any subject is better understood with laboratory support (i.e. Do and learn). In this paper it is proposed that implementing the concepts of Digital Signal Processing (DSP) on a hardware platform enhances the learning level of a student. Subjects involving mathematical concepts viz. DSP, Signals and systems, etc. lack the application to the real world in the curricula. To correlate this subject with real world, it is taught with the aid of simulation tools like SCILAB, Python etc. and the simulation tools have their own drawbacks viz. students end up in solving the same problem in simulation environment what he/she solves in the class room. This limits to applying the concepts only for the mathematical problem solving instead of real time problem solving. Moreover when the students are unaware of applying the concepts to the real world problems and implementing them, they are not exposed to the DSP related tools, equipment and their specifications. Hence students lack correlating the concepts of the subject to the real world problems. In this paper it is proposed that when a student learns DSP with an aid of simulation tool shall enhance his / her programming capability but when the student learns the same subject with the simulation tool and implement the same on hardware like TMS3206713 DSP boards, will be exposed to the real time applications of signal processing like noise cancellation, equalizers, etc; learns the tools, equipment usage and their specifications. Finally the student learning is evaluated by taking the feedback from the students who carried out their laboratory sessions with only simulation tool and those who did on both simulations as well as implemented on hardware like TMS3206713 DSP board. It is evident from students feedback that subjects like DSP with more mathematical concepts when taught with real world applications enhance the learning level of a student.EE03-

IP01 Measurement of Programme Specific Outcome (PSO) through Open Ended Experiment in Industrial Engineering and Simulation Lab of Undergraduate Programme

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Abstract:
Measuring Programme Specific Outcome's in Engineering education is a challenge for teaching faculty in general and doing so for a laboratory program and through an open ended experiment is even more challenging. Programme Specific Outcome's have been introduced for the first time in the year 2015-16, the department of Industrial and Production Engineering too has been experimenting various ways of achieving Programme Specific Outcome's which resulted into designing an open ended experiment in a laboratory program such that the students get to design, conduct, analyze and interpret a real time industry related problem by visiting a manufacturing industry.
The core concepts of Industrial Engineering and Simulation Laboratory specifically designed for VI semester Industrial Engineering students gives an opportunity to measure programme specific outcome "No-13" which is defined as "Visualize the manufacturing processes and tooling requirement for the chosen device/product and prepare a detailed plan of execution considering industrial engineering concepts". Keeping the above mentioned programme specific objective in mind the open ended rubrics was designed to measure two specific competencies namely - 13.2: Demonstrate an ability to choose suitable production processes and plan for development of tools and production aids and 13.3: Demonstrate an ability to develop process plan considering method, time and motion study and ergonomics. As the students are new to the concepts of Industrial Engineering and Simulation at the level of VI semester, it was required to teach them the basic concepts of Industrial Engineering and Simulation before they could start working on Laboratory problems. Hence the laboratory course was designed to be of 2 credits, the theoretical concepts of simulation part were taught in the lab before solving the laboratory problems, however the industrial engineering concepts were covered in the 3 credits theory course seperately in regular classroom sessions.
The open ended activity in Industrial Engineering Part and Simulation part have been interlinked such that the students carry out the identification of a problem, defining the problem, designing, conducting and analyzing the problem by

visiting a manufacturing unit. The problem on hand is solved first by using industrial engineering concepts and the solution to the problem is verified and validated using Simulation models before they interpret and propose a solution to improve productivity. The activities carried out by the students resulted into reinforcing their confidence to work on real time industrial problems and many of them expressed their desire to work on such problems in their Capstone Projects in the final year. Since the open ended experiment was assessed using rubrics the percentage attainment of each individual indicators of both the competencies were measured.

Keywords: *Open ended experiment, programme specific outcomes, competencies, industrial engineering and simulation.*

IP02-Enhancing the learning in mechtronics theory and lab through course project in PG

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*Abstract :*This work mainly bridges the gap between theory and practice, many students lack in understanding the basic concepts of the mechtronics system, so this helps all students to understand the concepts in a better way. It integrates the lab and mechtronic course project to create interest among the students to do some creative work by using mechtronics concepts.

Course Project and Experimental Based Learning was considered as a proper tool to achieve active learning in production engineering. Students are always willing to entertain new ideas or try new things sometimes even on the fly of "Innovation". The main goal of this activity was to expose PG students of Production Management in areas like Design, Fabrication, Testing and Analyzing the 'Setup' or 'Automatic Machine' prepared during the course time. Mechatronics system is a course highlighting the synergistic integration of various disciplines and its elements like Electrical and Electronic actuators, Sensors and Transducers, PLCs, etc. This subject is essential in the design of intelligent products (used in modern manufacturing system) it allows engineers to transform their conceptions into reality and also shifting complexity of mechanical system towards electronic system. Assessment is done systematically and Program outcomes (PO3, PO5 and PO10 of NBA) were addressed by the way of the task given to the students.

The idea here is to generate a platform for their creative work. The students were grouped (heterogeneous group) based on their previous ranking. The topic was fixed to each group and activity schedule was made. Student's progress was checked regularly and shortcomings are informed to all the groups. The project was successfully completed on time and students got very good practical exposure about the components and complexity in integrating them for proper functionality. It is also quite evident that the quality of answers in main examination (SEE) showed a remarkable improvement.

Keywords: Active Learning, Regular Assessment, PO (NBA)

IP03-INTEGREATED LEARNING EXPERENCE THROUGH OPEN ENDED ACTIVITY IN METROLOGY & QUALITY ENGINEERING LAB

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Abstract— Integrated learning is a learning theory describing a movement toward integration of different courses helping students to makes connections across curriculum. Integration of learning has widely become recognized as an essential educational outcome for the students in the twenty-first century. Integrated learning is a ability to link various skills and knowledge learned in a variety of contexts. Department of industrial production engineering is making an effort to provide integrated learning experiences for under graduate program through various means, one such initiative was executed for IV sem students of UG in metrology and quality engineering course through open ended experiment . The main objectives of this initiative is to provide integrated learning experience i.e. integration of manufacturing technology and measurement which students are learning in different courses , and anther objective is to compare of Traditional and advanced machine capabilities. An open ended experiment was given to the students to compare and analyze the process capabilities of traditional and advanced machine where the one batch of students used conventional lathe machine and other batch used the CNC lathe machine where they have manufactured the part and collected the data (dimensions) about the part and analyzed the data through MINI-TAB software and concluded about the capabilities of Traditional and advanced machines. Through this the students are able to establish integration between Manufacturing and measurement process which are different parts of product development and they are able to find out the difference in the capability of traditional and advance machines.

Key words: Integrated Learning,Tradiational Machine , Advanced machines, Process capablity.

Area of focus: Experiential Learning IS02 Cooperative learning: The impact of Online Tools and Technologies in Computer Architecture Course

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Abstract: The curriculum delivery and pedagogy around the Computer Architecture course is one of the most discussed, debated and deliberated topic as it plays an important role in the field of computer science and technology. This is more so in the present day, since the hardware designs and the technologies have changed drastically in the last decade. Online tools and technologies have come as a boon to the instructors for teaching courses which are perceived to be difficult by the student's. Two approaches, which the authors felt, have brought the student's closer to understanding the Computer Architecture course have been discussed with the impact it has created. The authors while designing the curriculum and pedagogy felt the students will be more empowered when they are able to (i) correlate the theory what they are being taught with the actual hardware on which they work (ii) appreciate what they are studying in the curriculum is what is being talked about by the researchers and scientists in the research literature. This paper describes the implementation of approaches, to enhance student learning outcome by keeping the above two points in mind. First the students were assigned to survey three Computer Architecture related reference journal papers/ white papers and were required to prepare a report in his/her own words analyzing the strengths, weakness of the papers as a self study component. This created the confidence in them that what they are studying in the curriculum is relevant to the present day needs and requirements. Secondly, they were told to demonstrate the utilization of tools for measurement and analysis of various parameters related to computer architecture, also compare the basic and advanced architectural features of a computer, specifically suited for present day applications with the content related to in the curriculum. The approach has resulted in students writing reports with almost zero to acceptable limits of plagiarism, working with tools and software, analyzing the technology and the curriculum content being related. The cooperative learning thus created also enabled the student's to be a part of peer evaluation and self-evaluation ultimately making them learn more from their peers.

IT03 Active Learning in Electronic Measurements and Instrumentation Course through hands-on

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Abstract— Electronic Measurements and Instrumentation involves with the measurement of various parameters related to the operation and use of electronic instruments. Measurements play a very important role in all engineering field. As a facilitator we have to strengthen the theoretical concepts by providing a platform for the students to analyze and design various instruments used for measurements. To improve the knowledge of measurements, analyzing and designing is the greatest challenge at the undergraduate level. This paper discusses implementation assignment as an activity introduced in this course to enhance the interest of the students.The purpose of introducing this activity was to correlate the theoretical concepts taught in the class with the hands-on experience. The details of the Implementation Assignment are also presented. The outcomes of the activity

facilitates in terms of academic performance along with exploratory learning approach and presentation skills.

Keywords—Implementation Assignment, Measurements, Program Outcomes

IT04 Experiential Learning: Learning Through Projects

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Abstract- There is a need to prepare engineering students for the future world in which they will practice as professionals. Educational practices that cover theory alone are outdated, as it is important for students to not only gain knowledge about engineering, but also to learn how to be an engineer. Hence a renovation in teaching and learning tactics is essential to prepare students to solve complex problems in worldwide. In order for students to practice as engineers, they need to have exposure to a number of projects that offer real-world problems, along with the complexity and uncertainty of factors that influence such problems. In this view Electronic instrumentation program is divided into two verticals embedded system and process automation to provide domain specific Knowledge to students and courses are designed to fit into these domains to satisfy current industrial needs. To provide more hands on experience curriculum and related activities are planned at three different levels. At first level(Second year) along with laboratory course, activities are planned and defined as course projects which augments theoretical concepts and also aids in interconnecting various courses for integrated approach, these activities strengthen the conceptual knowledge of students. Next level (Third year) theme based Mini and Minor projects are planned, themes are decided based on subject learnt in previous semester and recent technological developments. These activities provide a platform to realize applications belonging to a specific theme. In the final level capstone projects are grouped into Industry projects, product development and research oriented projects. Students are allowed to extend their academic experience into areas of personal interest, working with new ideas, issues, organizations, and individuals. These activities helped students to develop their communication (written, oral, and graphical), interpersonal (teamwork, conflict management, and negotiation), project management, and design skills. It also provides students with an understanding of the economic, financial, legal, and regulatory aspects of the design, development, and commercialization of the technology with these activities carried out throughout the year we are able to achieve better quality in paper publications, winning awards in prestigious project competitions conducted by industries and academia along with improvement in placements, Semester End Examination and addressing professional and technical outcomes of ABET.

Keyword: Course project, Theme based project, Capstone project, Achievements, ABET

IT05 Integrated Learning Experience: Engineering Solution Using Design Course Concepts

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Abstract:

Abstract— This paper explores the possibility of integrating an electronic system design course Linear Integrated Circuits (LIC) with a client/customer problem solving Engineering design course. Engineering design (ED) course being one of the cornerstone course in Mechanical engineering discipline focusing on the project design process starting from ideation to implementation, hence creating its demand in electrical sciences discipline as well. The proposed activity enhances the interest of the students towards the course and exploratory learning approach. It brings a new perspective to the integrated approach in developing enhanced problem solving skills for product/device design. As a felicitator, a teacher has to not only strengthen the theoretical concepts but also provide a platform for the students to model, analyze and design various applications using integrated circuits and have an experience of a complete product development process. Students found that investing sufficient time and effort at the front end of the project design process learnt in ED course will avoid unnecessary changes during detailed design and construction. Mentor Graphics tool is used to carry-out the activity, which helped the students to understand the functional behavior of system schematic, simulation and analysis of the design and provide solutions to conquer the design challenges involved. Findings showed that students built high competencies in design phase and teamwork. They followed the engineering design process to strengthen their understanding of the open ended design and emphasize creativity and practicality in developing a model to cater real time signal acquiring and monitoring the physical parameters. There was a significant positive difference in student's academic achievement in SEE and attitude towards learning the courses through this integrated activity.

Keywords—Linear Integrated Circuits, Engineering Design, Program outcomes, SEE

MCA02 User Interface Design – Learning by Reflection

DeepaMulimani, S.V.Seeri, P.R.Patil, Sujata Kulkarni

Abstract:

In these days of intuitive and intelligent software the audience is not going to put any work into using the product, application or operating system – they'll expect it to be obvious. No one is going to read a lengthy, detailed instruction manual. Hence the perception of any software is driven entirely by its User Interface (UI). Usable software sells better and unusable software is abandoned. Users' time is getting more expensive every year. Interfaces that waste user time repeatedly over a lifetime of use impose a hidden cost that companies are less and less inclined to pay. The course "Principles of User Interface Design" offered during MCA I semester aims to train the students in building usable UI for any software. The course details the characteristics of usable UI and enforces the use of design standards. In this course the students had to realize" what software quality is?" and "what are the good or bad implications of a UI design on it?" They had to instantly correlate the concepts to the UIs of the software they used in their routine. This paper investigates Experiential Learning methodology, focusing on "learning through reflection on doing" for this course. The approach comprised of three main activities. In the first activity a set of case studies presented essential components of a

usable UI such as – Learnability, Efficiency, Memorability, Error Handling and User Satisfaction. In the second activity, the students required to identify and present one good UI and one bad UI. The third activity had three main tasks, which are – i) Task and User Analysis. ii) Creating Initial Design and Cognitive Walkthrough.iii) HTML Prototyping.

This novel methodology of experiential learning helped the students to develop good UIs for simple applications, which were demonstrated in Web Programming Laboratory and assessed by the faculty members with appreciation. A rubric was used to test the concepts realization among students. This approach can be adopted in designing good UIs in mini projects and capstone projects. The students put up an overall good performance.

MCA03 C++ Teaching Using Real Life Example around a Class as a Core

Deepa Mulimani, S.V.Seeri, Shashikala Budni, P.R.Patil

Abstract: Over the years Object oriented programming (OOP) has gained the dominance in both the software industry and education. There are a number of OOP versions released by Software companies and the same are adopted by the educational institutions at various levels in their curricula. The main reason for this inclination is driven by the fact that OOP solves any problem by imitating the mental model of humans. It is usually a challenge for teachers to imbibe OOP concepts in novice programmers. Teaching fundamentals of OOP at an introductory level is challenging. This paper presents a pedagogical approach used for teaching/learning process of Object Oriented Programming in C++ course offered at MCA II semester. The course focuses on development of OOP skills and concepts among students. The approach uses real life analogies to effectively enhance the learning of OOP concepts among students. Students might program in an OOP language but fail to program in an object-oriented style.This is because students are unsuccessful to model given problem in terms of objects. To ease this, single real life example around class as a core is used to help students acquire these OOP concepts. The use of a single example from start to finish facilitated deepening of teaching. It mainly helped to join with ease the new concepts and mechanisms, such as class combination, inheritance and polymorphism. Eventually the example expanded into a kind of system. The proposed methodology comprised of three phases. In the first phase the students are introduced to abstraction and encapsulation concepts. Second phase introduced inheritance concept. And third phase dealt with polymorphism concept. This approach demonstrated effectiveness in motivating students to incorporate OOP concepts for developing simple real world applications. It has also improved the
quality of teaching C++ programming course. An evaluation of the problems experienced in teaching OOP is presented and some possible approaches for improving the quality and success of such courses are discussed. The approach can be adopted for teaching other OOP courses such as, C#, Java, etc.

MD02 Applied Statistics with R Programming: An Innovative Approach

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Abstract

The knowledge of Applied Statistics taught for Computer Science and Information Science Engineering students was covered with theoretical concepts. For the academic year 2015-16, an innovative step was taken towards mapping applied statistics course with real world examples in order to teach students the importance of statistics. As the students were from programming background, this inspiration took us to implement the theoretical concepts using the powerful statistical programming languages. On the basis of survey made, it was found that R Programming language is best suited as it is one of the open source tool with many built-in packages and libraries. It was easy for the students to adapt this new environment as they were familiar with other programming languages as well. This Tutorial for Applied Statistics course was conducted for 12weeks. Initially, since the students were unaware about the R programming environment, so first two weeks of laboratory sessions were conducted with the Basics of R programming IDE. From 3rd week onwards, every two sessions were utilized for demonstration, followed with assessment on the concepts covered. This tutorial had weightage of 20marks out of 50marks CIE (Continuous Internal Evaluation). In this paper, we present the objectives of tutorial, activities conducted and assessment rubrics. Also, this paper presents the concepts of statistics which are mapped using statistical programming tool.

MD03 Learning Style Preferences of Engineering Students

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Abstract-

It is well established that learners have different learning preferences / characteristics. There are multiple ways of characterising learners based on their learning preferences available in the literature. Even though there are efforts to design pedagogic practices considering the learning preferences of learners, it still demands further investigation. Further, what factors influence learning preferences of learners is also an interesting dimension of research. Attempts to know about these factors and how they influence learning preferences are desirable as it will help design content as well pedagogy respecting the learning preferences. Attempts to study the factors that influence learning preferences of native internet generation learners is done in our work and presented in this paper. How factors like gender, medium of instruction and urban / rural divide influence learning styles / preferences is studied in this work. The specific research questions of this study are:

1. Whether learning styles change over a period of time?
2. How do the factors like gender, medium of instruction have influence on learning style preferences of learners?
3. Whether urban / rural divide has any influence on learning style preferences of learners?

Learning style preferences of students of undergraduate engineering degree programs are used for the purpose of this study. Though there are different learning style assessment methods / tools available in the literature, because of availability of software tool and the familiarity of authors with the tool, Questionnaire from Index of Learning styles (ILS) by Richard M. Felder and Silverman is used in the study. The results of the study are presented in the paper and discussed.

MD04 Engineering Profession-Freshman Perspective

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More we know about our learners the better are we in a position to mentor them. This is more so in engineering education, as the decision of selecting this program for studies is presumably done by the learner with full knowledge. Prior knowledge about engineering profession and motivation level of the learner are two important factors among several that influence learners' perception of engineering. There are several approaches used by Engineering Education practitioners to know the prior knowledge about the engineering profession. This paper discusses about the picture elicitation technique used by the authors to understand the prior knowledge of the learner regarding Engineering profession. Along with this, an attempt to know the motivation of learners to join engineering program is studied using learner's awareness about job opportunities for engineers.

Through this work the authors attempt to address the following research questions.

1. Does motivation level and prior knowledge about engineering profession influence the learner's perception of engineering profession?
2. Does family background and learner's previous educational setting form the roots of the factors influencing the learner's perception on engineering profession?

In picture elicitation activity, the pictures drawn by the learners based on their perceptions were classified into categories that emphasize on benefits of engineering, engineering impact on society, technology and engineering process and tools. These categories form the different dimensions of understanding of the learner on the profession. The paper attempts to trace whether the roots of these dimensions of understanding of engineering profession are laid in their family background and their previous education background.

The motivation of the learner to join engineering program differs from learner to learner. A common ground to study their motivation level is provided by checking their awareness towards various job opportunities available in different disciplines of engineering. The learner's consciousness of job opportunities in different disciplines of engineering are categorized as job titles, roles, product or service based jobs and branch based jobs. This awareness in

the learner is analyzed with respect to their prior education setting to evaluate its impact on their motivation to pursue engineering.

This study could be utilized by the education practitioners to rightly enlighten the learners at the right time about their career as an engineer which is very much essential for them to build their path throughout the engineering program and after. The learners with different background should be handled in a common platform to address their motivation and perception of engineering profession.

MD08 Picture pieces activity: An effective team building strategy

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Abstract: Practice of Engineering Profession requires Engineers having the ability to work in teams. This is well articulated in Graduate Attribute 9 of Washington Accord. Furthermore, engineering problem solving requires multi-disciplinary skills. This necessitates the need for engineers to be able to work in multi-disciplinary teams. The challenge for academia is to make the "Engineers in making" understand the need for working in teams, that too with multi-disciplinary skills. Projects form an important part of engineering curriculum. These projects offer learning contexts that enhance student learning. The challenge for academia is to make the students realize the importance of "Project management" which is an art of managing the project and its deliverables with a view to produce finished products or service. Accomplishing this goal requires that all team and team members work together with a common strategy. Keeping this in mind, an activity was designed in "Project Management" module of a course titled "Engineering Exploration" This course is designed for freshman students of undergraduate engineering program in KLE Technological University. Through this activity called "Picture Pieces Activity", the authors have attempted to communicate to students

1) The need to work in team in order to successfully accomplish a given task
2) The factors that contribute to effective team execution of a project

This paper shares the details of the activity, the experiences of authors and the learnings in doing this activity.

ME01 ENHANCING DESIGN CAPABILITY THROUGH EXCLUSIVE TEACHING IN MACHINE TOOL DESIGN FOR UG STUDENTS

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Abstract

Machine tools have become quintessential in any manufacturing scenario, so do design of machine tools for specific application. The challenge in any design is meeting engineering specification thus fulfilling needs of end users. Design of machine tools for various technical specifications is equally challenging wherein designer has to assess all possibilities of improving machine capabilities along with meeting all technical requirements. It has been two years since Machine tool design course has been introduced for UG in mechanical engineering. This involves designing of machine tools for a given specifications. This is a 10- credit course includes theory of 4 credits and 6 credit project. The objective of the course was to enable students:

1. Be well versed with 2D and 3D solid modelling with the application of GD&T,
2. manufacturing requirements (Limits and fits and surface roughness selection), material
3. selection based on functions etc.
4. Concept development of machine tool based on given specifications.
5. Carry out calculations to establish the factor of safety for safe working of machine as a
6. system and its components.
7. Design considering safety, ergonomics and aesthetics factors.
8. Document systematically the details of the design effort

Few road blocks were encountered during teaching and assessing the students during the course; one more observation made during earlier teaching of the course was student's incompetency in using GD&T, manufacturing requirements for manufacturing drawings, which was earlier taught
in the lab sessions as miscellaneous topic. It was not effective to provide training on GD&T, fits and tolerances, material selection in the project classes since there were only 40 students in a batch. This was resulting in poor manufacturing drawings. In view of this a modifications were made to give little extra importance in the curriculum. This paper discusses efforts made to fill the identified gap and enhance students understanding on the topic and its assessment methodology. This effort translated into not only improved quality manufacturing drawing from design, but also their understanding on selection

of various manufacturing process for different requirements. This could be seen from the documentation of their project findings.

ME02 Learning Enhancement in Mini-Project through Effective Assessment

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Abstract

The thrust in academic institutes today is to make industry ready engineers. In this regard the academic institutes are emphasizing more on projects to bridge the gap between industry and institutes. The industrial needs are also reflected in Graduate Attributes (GA's) of the outcome-based education system. Some of the GA's are attained through projects which are incorporated at different levels of the program. Through the project work students are exposed to team work environment and apply their classroom knowledge into the analysis of real field problems. The objective of this work is to enable each student to design and develop mechanical systems by applying engineering design concepts.

This paper describes the systematic planning, implementation and assessment of mini-project which was introduced at third year level (5^{th} Semester) for three credits in Mechanical Engineering program to address graduate attributes such as GA2-Problem analysis, GA6-The engineer and society, GA9-Individual and team work and GA10-Communication. This work also prepares students for the capstone project to be conducted at the fourth year level. The challenge here is to develop complete framework that includes preparing course outcomes, identifying appropriate PIs meeting the program outcomes, assessment rubrics for each PI's and the use of PLM software. The assessment to measure attainment of each PI's using rubrics is done by team of faculties at different phases of the project. In addition, each step of the engineering design process was measured from the start till the end of the

project. Analysis of the assessment data reveals that each PI's are attained reasonably well.

ME06 Enhancing Student Learning in an Interactive Classroom Environment

ABSTRACT

It is often reported in the literature that the student learning is greatly enhanced when they are engaged in activity based learning, as against the age old conventional teaching methods. This paper discusses one such attempt that has been made in revised freshman course – Basic Mechanical Engineering for the year 2015-16 – even semester. Effectiveness of student learning is measured by what the student is able to do. Prime motivation behind introducing this pedagogical practice was to enhance student learning. The Basic mechanical engineering freshman course offered at first semester was with conventional chalk and talk classes and it was our experience that there was a lot of scope to enhance the learning in the course by engaging the students into some activities. However our experience in engaging the students in the activity based learning had been limited. We introduced the collaborative, informal, interactive and forum-like discussion classes at the 2nd semester after the minor 1 exam while the engagement with the students before minor 1 exam was as in the past. The purpose of this study is to assess the effect of collaborative classes on the performance of the students. In the collaborative classes students were made to collectively prepare and discuss the pre-assigned topics being taught in the conventional classes. The collaborative classes were different when compared to the conventional classes, in that the students were made to sit in an informal setup. Student groups presented the topics assigned to them and responded to queries of others. Students underwent objective type tests during collaborative classes and minor exams in conventional classes. An improvement of about 20% was observed in the average score of minor 2 exam as compared to minor 1 exam.

KEYWORDS

Conventional, Collaborative, Informal, Interactive, Forum-like discussion

ME08 Tinkering to Fabricating-Imparting basic skills of fabrication.

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Abstract:

The knowledge and skills of different tools in the workshop are very much essential for Engineering students. An immediate necessity could be during their project activities. Imparting this knowledge has been done through various methods in different universities. One such experiment was conducted in the name of “Design Project” for freshmen at KLE Tech, Hubballi. In this work, effort has been made to introduce workshop as a tutorial component of Basic Mechanical Engineering Course Curriculum. This course is of 3 credits, out of which 2 are for class room sessions and 1 for tutorial session. Demonstration on usage of tools was given to students during tutorials. To check the effectiveness of tutorial component, design project was introduced. After the completion of the course, an anonymous feedback taken by the students revealed that BME curriculum and design project were enjoyable learning processes. This article showcases the BME curriculum with tutorial component, conduct of design project, its assessment and feedback taken by the students.

ME10 Use of Computer tools, Experimental Videos and low budgets experiments in teaching Fracture Mechanics

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Fracture toughness testing and microstructure analysis. School of mechanical engineering undergraduates typically study courses like statics, dynamics, solid mechanics, engineering mechanics, mechanics of materials, machine design, material science and vibrations. In these courses they get introduced to some of the basic fundamental concepts of fracture mechanics and principles. Fracture mechanics is based on the implicit assumption that there exists a crack in a component. The industries which involve press fit, rotating disk, thermally stressed pipe, pressure vessel, etc., are presented to show how fracture mechanics can be used for estimating the load that a member can sustain without causing unstable fracture. This clearly indicates the necessity of studying fracture mechanics at least as an elective course for both undergraduate and postgraduate students those who want to pursue their career in the field of mechanical structural integrity. Previous year students expressed that the subject is not easy to understand and concepts are not clear. This issue made the instructor to teach this subject by conducting experiments as per the set procedure by American Society of Testing Methods (ASTM). However the test methods are expensive to perform. Methods for enhancing the teaching of fracture mechanics under constraint is the feature of this paper. An attempt has been made to illustrate that the essentials of the subject can be demonstrated using simple, inexpensive experiment, videos on fracture experiments and FE simulation. With these requirements and constraints the course outcomes are framed. In the present paper the outcomes: Problem Solving, Use of Modern Tools and Life Long Learning are addressed for the couple of Course outcomes through usage of computer tools, experimental videos and small inexpensive class room experiments. The steps used by Sawy and Sweedan are adopted in our paper. The steps are made clear to the students by conducting workshop of 6 hours for two days with the help of research scholars and M.Tech final year student. Each student, conducted the FE analysis on Single Edge Notch Tensile specimen by preprocessing the required parameters from collected Journal article. Required outputs are obtained from software and compared with analytical solution. After completion of the task student's response for given questions are analyzed and author's comments are presented. Students have shown interest in learning FE tool and concepts are made clear through these exercises. The

students are able to understand the effect of various variables in fracture analysis for which students used excel sheets and able to write the macros.

Keywords: Fracture mechanics course; Teaching methods; Laboratory methods;

PHY01 Curriculum Design in Engineering Physics: An Experience

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Abstract:
Curriculum design is one of the most critical aspects of the education system, which has to be framed carefully to meet the criteria's of outcome-based education for program evaluation and for continuous improvement. From the past few decades there is tremendous growth in science and Technology and the information to include for the curriculum is overloaded. So there is a need to design the syllabus more specifically to meet the required objectives.
Engineering Physics is one of the fundamental subjects in Engineering Education which provides the basic foundation for all modern science and Engineering. Physics, being a very broad subject with many branches, is an immense body of knowledge and without specific goals, it would not much matter which topic to study. So there is a need to focus on the relevant and discipline oriented content requirement for the Engineering Physics theory and laboratory curriculum for Freshman Engineering Program. From the past few years we experienced a growing gap between the curriculum of Engineering physics and the demands from engineering departments. This paper presents details of a new curriculum design and delivery evolved due to effective engagement of the engineering departments and physics department
and effectively bridging the gaps. Engineering Physics Syllabus is designed more systematically in two broad categories/streams such as Electrical sciences and Mechanical sciences streams with full focus on
Applied Physics topics, using International Standard Books- Physics for Scientists and Engineers, A Strategic Approach by Ryndall and Knight and other similar titled books. These books include new pedagogical features also coach a strong problem-solving technique through an effectively organized research proven approach. This improves student access to quality learning materials. We have adopted the design and delivery approach as fallowed in these books. Experiments are designed in correlation with the syllabus to meet the criteria's of outcome-based education. With this change we are able to address program outcome 1(Engineering Knowledge) and 2.1(problem analysis) as compared to earlier syllabus which satisfied program outcome 1(Engineering Knowledge).

Faculty Conclave 2015-2016

Faculty Conclave – the in-house annual event was conducted on July 27-28, 2016 at KLE Tech., Hubballi. The objective of the Faculty Conclave is

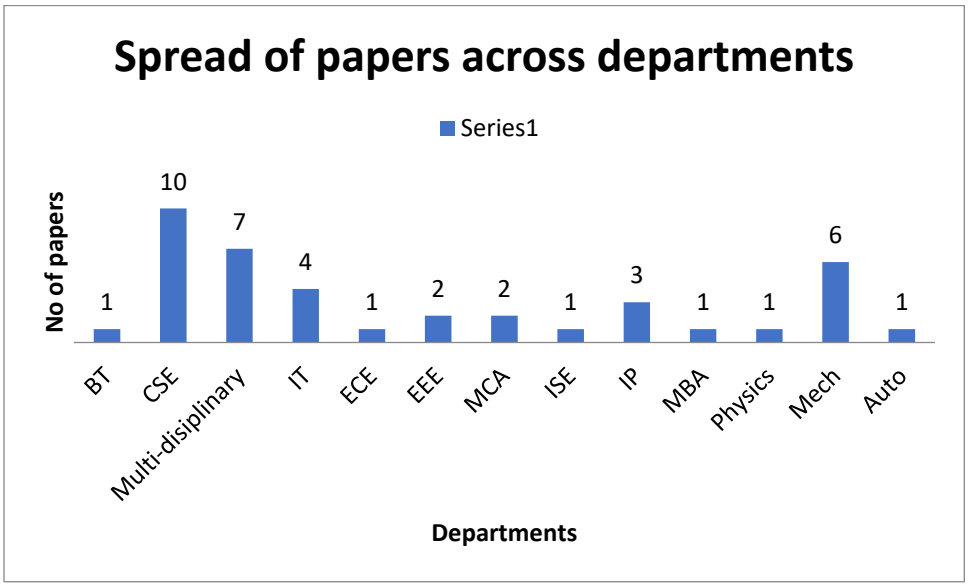
1. to provide a platform to showcase new pedagogical practices and research in the space of engineering education.

The conclave was formally inaugurated by Dr. Ashok Shettar, Honorable Vice-Chancellor, KLE Technological University and addressed the gathering. Dr. Gopalkrishna, Director, CEER, KLE Tech welcomed the audience.

The sixth in the series – "Faculty Conclave 2016, saw a total of 40 papers authored by 111 faculty members. The broad areas of focus are:

1. Curriculum Innovation
2. Outcomes Assessment
3. Experiential Learning – Open ended experiments, projects, field visits
4. Pedagogies in Engineering Education
5. Research Experiences, Entrepreneurship and Industry – Institute Collaboration
6. Graduate Program Experiences (MTech)
7. Technology Enhanced Learning & MOOC Experiences

The spread of papers across different disciplines is as shown below:




Agenda
Philosophy of the proposed method
Introduction
Objectives
Literature Survey
Proposed Approach–Design and Implementation
Results
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