Minutes

of the

18th Meeting of the Board of Studies

Faculty of Engineering Sciences

held on

January 29, 2018

through VLC

Bahria University Islamabad

Contents

Minutes of the 18th Meeting of the Faculty Board of Studies Engineering Sciences held on January 29, 2019 by VLC

Attendance:

BUIC

Present

• Prof. Dr. Muhammad Najam ul Islam	Dean ES	Chair
• Prof. Dr. Tahseen Ullah Khan	HOD(E&ES)	Member
• Prof. Dr. Faisal Bashir	HOD(CS)	Member
• Senior Associate Prof. Dr. Awais Majeed	HOD(SE)	Member
• Senior Assistant Prof.Dr.Khalid Javed	HOD(CE)	Member
• Senior Assistant Prof. Dr. Muhammad Aamir	(Representing) HOD(EE)	Member

BUKC

Present

• Prof. Dr. Nargis Yasmeen	HOD (E&ES)	Member
• Senior Associate Prof. Dr. Humera Farooq	HOD(CS)	Member
• Associate Prof. Dr. Sohaib Ahmed	HOD(SE)	Member
• SeniorAsstt. Prof. Dr. Rizwan Iqbal	HOD(CE)	Member
• Prof. Dr. Haroon Rasheed	HOD(EE)	Member

BULC

• Asstt Prof. Mr Farhan Saeed Sherazi	HOD(CS&IT)	Member

In Attendance

• Prof. Dr. Muhammad Zafar	E&ES	BUIC

Proceedings

Preliminaries

1. The 18th Faculty Board of Studies, Engineering Sciences meeting took place on **January 29,** 2019, with the quorum complete; the proceedings commenced at **12:00 hrs**, with recitation from the Holy Quran.

2. In his opening remarks, the Chair stressed the importance of participation in the proceedings while staying focused on the point under deliberation.

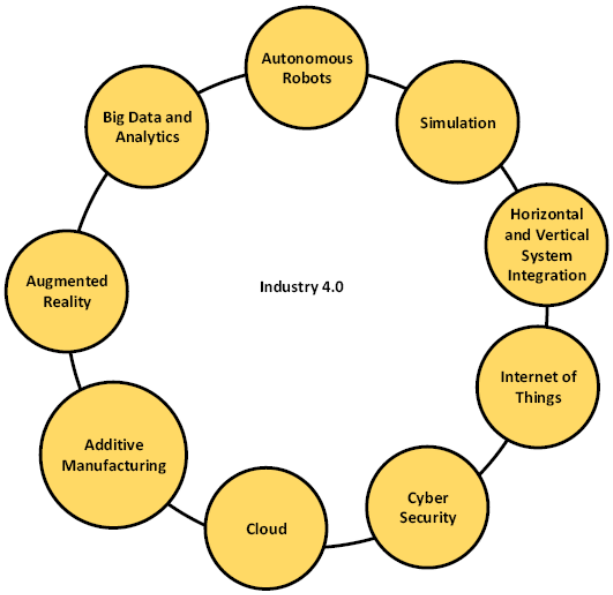
New Items:

Item 1801: Addition of five electives in BEE roadmap
Sponsor: HOD(EE)BUKC Referral Authority: HoDs(EE) BUKC & BUIC

Summary of the Case

Industry 4.0, emerged under the leadership of Germany, and is a term first used in 2011. The industry 4.0 mainly aims to bring together information technology and industry.

The industry 4.0 can be defined as smart factories. The viewpoint of industrial production targeted in the future is shown in Figure below. There are nine different technological fields in relation to each other in industrial production process.



The concept of Industry 4.0, is very convenient especially for the engineering sciences such as Electrical, Electronics and Telecommunications. This should be implemented as a pilot by five elective courses related to I 4.0 in BEE curriculum. Later, the scope of these courses should be extended and moved into different domains.

Discussion

The chair asked sponsor of the agenda item to discuss the case with HoD EE at BUIC and recommend consolidated list of electives to be added to BEE roadmap .Recommended list of electives to be added at attached at Appendage 1801 .

Decision 1801
The case pended till the next FBoS.

Item 1802: Participation of Industries and Academia in FBoS and ACM
Sponsor: HOD(EE)BUKC Referral Authority: DBoS EE BUKC

Summary of the Case

In last accreditation visit PEC team emphasized over feedback or input from other institutions and industries personnel in curriculum revision and academic policies regulations.

Discussion

HOD-EE KC presented and iterated the case. The agenda item was deliberated in length in FBoS discussed and house recommended to add at least two external members in DBoS and FBoS.

Decision 1802

The case of adding external members is to be moved on file by the Dean and respective HoD.

Item 1803: Revision of PEOs as per PEC accreditation team guidelines

Sponsor: HOD(EE)BUKC Referral Authority: DBOS EE BUKC

Summary of the Case

PEC accreditation team pointed out some changes to modify BEE PEOs.
Following amendments are recommended in PEOs before PEC visit to BUIC:

PEO 1 : Professional Employment
Graduates will be able to find employment and explore entrepreneurship related to Electrical engineering in the fields of design, development, research, operations and maintenance, technical sales and marketing.

PEO 2 : Technical competence
Demonstrate technical competence in the field of electrical engineering while employed by finding solutions to complex problems, design new products, and use their analytic, engineering and problem-solving skills to provide value for the industry.

PEO 3 : Professional growth
Graduates would be able to pursue their professional growth by taking up higher studies for advanced degrees, learn new technologies as they emerge, develop skills in the usage of new tools, undertake professional development courses and keep themselves updated in their chosen specialization.

PEO 4 : Social Engagement
Work in multicultural teams, provide leadership in their area, and be profound to ethical, moral, environmental, gender and public issues and the impact of their work on the society and the community.

Discussion

The house recommended going to the ACM for modifications in PEOs after the PEC visit of EE IC.

Decision 1803

Point dropped.

Item 1804: EE BUKC software possible integration in CMS

Sponsor: HOD(EE)BUKC Referral Authority: DBOS EE BUKC

Summary of the Case

Engineering institutions are dropping old traditional teaching methods and religiously following the OBE in their education system after PEC guidelines on Washington Accord. An OBE assessment solution is proposed to automate the manual complex system and to eliminate the tiring work of assessment method. A desktop based application called "Smart Outcome Based Application" is designed by EE Department BUKC in order to facilitate the users, facing difficulties to assess their students according to OBE assessment method.

Discussion:

The chair asked to discuss recommended software with the OBE team notified by the Registrar in 2017.

Decision 1804:

Point dropped.

Item 1805: Duration of internship period

Sponsor: HOD(EE)BUIC Referral Authority: DBOS EE BUIC

Summary of the Case

The current policy for internship is from 6-8 weeks, however, many companies offer only 4 weeks internship e.g. IESCO and 502 EME Workshop (Dhamyal) offer 4-week internship. In such conditions arranging another internship for students becomes difficult at time. Therefore, minimum limit should be reduced to 4 weeks,

Discussion

Dr. Muhammad Aamir presented and iterated the case. The house recommended maintaining the status quo. The chair suggested splitting the 6 week internship into two halves to meet the minimum 6 week internship requirement.

Decision 1805

Point dropped.

Item 1806: Visual and Audio facility to be allowed during exams.

Sponsor: HOD (EE) BUIC Referral Authority: DBOS EE BUIC

Summary of the Case

HEC has proposed outline for certain courses of BEE program that need to be designed while considering affective domain. In current BEE roadmap following two course have the potential for their assessment on affective domain learning:

i. Communication Skills
ii. Technical Report Writing and Presentation Skills (TRW).

The assessment of such CLOs requires receiving and responding mediums. At the moment platform of Quiz and Assignment is used to access affective domain skill, however, to incorporate a balanced approach towards these CLOs there is a requirement of visual and audio facilities during mid and final exams. Other possibility is to change assessment distribution currently in practice i.e. change marks distribution in Quiz, Assignment, mid-term and Final Term.

Discussion

The chair pointed out that MS has already changed the mechanism of evaluating Communication Skills course; we can follow the same mechanism of evaluation. The house supported the chair's argument. The chair formulated the following committee to discuss and devise mechanism for evaluation CS and TRW courses:

i. Dr.Sohaib Ahmad - HoD SE BUKC
ii. Dr.Muhammad Aamir - Snr Assistant Professor, EE BUIC

Committee is to submit their report before February 20, 2019.

Decision 1806

Committee could not submit its report till the prescribed date. Case pended till next the FBoS.

Item 1807: E-folders for FMs

Sponsor: HOD(EE) BUIC Referral Authority: DBOS EE BUIC

Summary of the Case

To save the resources there is a need to encourage a paperless environment, BUI is already turning towards e-environment. Approximately Rs 500 /folder/FM, expenditure has been estimated by EE department. It is the need of the hour to create e-folders for FMs online that can be accessible to the FMs and respective HOD.

Discussion

The sponsor presented iterated and presented the agenda item. The chair supported the agenda item and suggested design software to cater e-folder mechanism. HoD(EE) BUKC added that the past experience with e-folders was not good , moreover , PEC and NCEAC may have their reservations for e-folders. The chair asked HoD(CS) and HoD(EE) to find out the folder requirements of NCEAC and PEC respectively. HoD(CS) BUIC is to submit the report in two weeks.

Decision 1807

Report not received in two weeks. Point dropped.

Closing of the Meeting

There being no further points, the Chair brought the meeting to close, thanking the participants for their wholehearted participation in both sessions.

Prof. Dr. M. Najam-ul-Islam
Dean (ES), Head FBoS
6 February , 2019

Distribution:

BUHQ:	Rector, Pro-Rector, Registrar DAA
BUIC:	DG BUIC, DIC HOD(EES), HOD(EE), HOD(CS), HOD(SE), HOD(CE)
BUKC:	DG BUKC, DKC HOD(EES), HOD(EE), HOD(CS), HOD(SE), HOD(CE)
BULC:	DLC, HOD(CS)

Appendages:

Appendage 1801

Proposed Elective Courses for BEE Program roadmap

S.no	Course Title	Course Code	Credit Hours	Prerequisite	Intended Pool of Electives
1.	Introduction to Cloud Computing	CSC-410	3+0	None	IDEE Elective
2.	Sales and Marketing Strategies for Engineers	MGT-426	2+0	None	Management Elective
3.	Artificial Intelligence	CSC-411	3+1	Object Oriented Programming	IDEE Elective
4.	Industrial Internet of Things (IoTs)	EEI-411	3+1	Object Oriented Programming and Data Communication	IDEE Elective
5.	Mobile Applications and Development	CSC-341	3+0	Programming Fundamentals	IDEE Elective

Course Title: Introduction to Cloud Computing
Course Code: CSC-410
Credit Hours: 3+0
Prerequisite: None

COURSE LEARNING OUTCOMES (CLOS):
By the end of the course, students should be to:

CLO 1	Identify the advantages and disadvantages of various cloud computing platforms, security and privacy issues in cloud computing. **C1**
CLO 2	Analyze the performance, scalability, and availability of the underlying cloud technologies & software **C4**
CLO 3	Solve a real-world problem using cloud computing through group collaboration. **C3**

MAPPING OF CLOS TO PLOS (PROGRAM LEARNING OUTCOMES):

PLOs		CLOs		
		CLO 1	**CLO 2**	**CLO 3**
PLO 01	Engineering Knowledge	✓		
PLO 02	Engineering Problem Analysis		✓	
PLO 03	Designing and Development			
PLO 04	Investigation			✓
PLO 05	Modern tool usage			
PLO 06	Engineer and Society			
PLO 07	Environment and sustainability			
PLO 08	Professionalism and Ethics			
PLO 09	Communication			
PLO 10	Individual and Team Work			
PLO 11	Life-long learning			
PLO 12	Project Management			

Content:

Cloud Computing
Key aspects of cloud computing(cc), Cloud system, Services offered by cc, Old IT infrastructure vs. cloud Web 1.0 to 4.0, SAAS, PAAS and IAAS, Public, Private and Hybrid Cloud.

CRM Introduction
Introduction to CRM, CRM metrics, technologies & Channels.

Salesforce Introduction
Salesforce terminologies, logging into Salesforce, Salesforce user creation and terms, Database.com, Sales Cloud Overview, Editions of Salesforce, Types of Salesforce sandbox, Salesforce development, Tabs, objects and Fields.

Warehouse App
Warehouse App, Custom fields and Objects, Field types (DT) and Tabs.

Relationships, Formulas & Validation
Master-Detail, Lookup and Record Format, Formula, Roll Up Summary and Improve Validation Rule.

Workflow
What is workflow, Evaluation Criteria, Rule Criteria, Salesforce navigation term, Records, Salesforce navigation term – Sidebar, Salesforce.com and Force.com, Database.com, Sales Cloud Overview, Service cloud Overview, Editions of Salesforce, Types of Salesforce sandbox, Salesforce development, Tabs, objects and Fields.

Warehouse App and Relationships

Create Warehouse App, Custom Objects, Custom fields, Create records, Field types (DT). Master-Detail, Lookup, Record Format.

Formulas & Validation

Formula, Roll Up Summary, Improve Validation Rule.

Text Books:

1. Rafaels, R. J. (2015). Cloud Computing: From Beginning to End, CreateSpace Independent Publishing.
2. Marinescu, D.C. (2013). Cloud Computing Theory and Practice, Elsevier.
3. Erl, T., Puttini, R., & Mahmood, Z. (2013). Cloud Computing: Concepts, Technology & Architecture, Prentice Hall.

Course Title: Sales and Marketing Strategies for Engineers
Course Code: MGT-426
Credit Hours: 2+0
Prerequisite: None

COURSE LEARNING OUTCOMES (CLOS):

By the end of the course, students should be to:

CLO 1	Understand the fundamentals of marketing strategies & matrix.
CLO 2	Identify new marketing imperatives intelligence, interfaces & integration.
CLO 3	Gain a clear understanding of the role in supporting the sales and marketing of company's products and services.
CLO 4	To understand how to develop a close business relationship with clients

MAPPING OF CLOS TO PLOS (PROGRAM LEARNING OUTCOMES):

PLOs		CLOs			
		CLO 1	CLO 2	CLO 3	CLO 4
PLO 01	Engineering Knowledge				
PLO 02	Engineering Problem Analysis				
PLO 03	Designing and Development				
PLO 04	Investigation		✓		
PLO 05	Modern tool usage				
PLO 06	Engineer and Society	✓			
PLO 07	Environment and sustainability				
PLO 08	Professionalism and Ethics			✓	
PLO 09	Communication				
PLO 10	Individual and Team Work				
PLO 11	Life-long learning				✓
PLO 12	Project Management				

Course Outline:

The marketing engineering approach

The marketing decision environment, Basic economic concepts for analyzing marketing actions, Tools for marketing engineering, Business value of marketing engineering.

Customer value assessment and valuing customers

The concept of customer value, approaches to measuring customer value, Valuing customers and customer lifetime value.

Segmentation and targeting

The segmentation, targeting, and positioning approach. Segmentation analysis, traditional segmentation. Targeting individual customers, implementation barriers and solutions.

Positioning

Positioning through brand linkages, positioning using perceptual maps, combining perceptual and preference mapping, translating preference to choose, reverse mapping (from map to raw data) incorporating price as an attribute uses and limitations of perceptual and preference maps.

Forecasting

Forecasting methods, new product forecasting models and their methods to choose.

New product and service design

The new product development process, models for idea generation and evaluation, conjoint analysis for product design.

The marketing mix

Pricing decisions, resource allocation and the marketing communications and promotions mix, sales promotions: types and effects.

The digital, online revolution in marketing

The evolution of online technologies, online advertising versus traditional advertising, search analytics, social listening and text analysis.

Harvesting value from marketing engineering

Online Analytical Processing (OLAP), Models Offered as Web Services, Intelligent Marketing Systems.

Text Book:

Principles of Marketing Engineering and Analytics 3rd Edition by Gary Arvind Arnaud. (Decision Pro, Inc.)

Course Title: Artificial Intelligence
Course Code: CSC-411
Credit Hours: 3+1
Prerequisite: Object Oriented Programming.

COURSE LEARNING OUTCOMES (CLOS):

By the end of the course, students should be to:

CLO 1	Understanding and Recognition of an AI-problem.
CLO 2	Model AI-problems and point out an appropriate solution (for example expert systems, search algorithms, learning).
CLO 3	Describe and use search methods, expert systems, statistical methods and simple methods for learning, discuss different definitions of AI, and relate those to the history of AI.

MAPPING OF CLOS TO PLOS (PROGRAM LEARNING OUTCOMES):

PLOs		CLOs		
		CLO 1	CLO 2	CLO 3
PLO 01	Engineering Knowledge	✓		
PLO 02	Engineering Problem Analysis			
PLO 03	Designing and Development		✓	
PLO 04	Investigation			
PLO 05	Modern tool usage			✓
PLO 06	Engineer and Society			
PLO 07	Environment and sustainability			
PLO 08	Professionalism and Ethics			
PLO 09	Communication			

PLO 10	Individual and Team Work			
PLO 11	Life-long learning			
PLO 12	Project Management			

Content:

- Introduction to AI, history of AI, course logistics, intelligent agents, uninformed search, Heuristic search, A* algorithm, Adversarial search, games, Constraint Satisfaction Problems, Machine Learning: Basic concepts, linear models. Perceptron, K nearest neighbors, Machine Learning: advanced models, neural networks. SVMs, decision trees and unsupervised learning. Markov decision processes and reinforcement learning. Logical Agent, propositional logic and first order logic, AI applications, Introduction to Deep Learning, Convolution neural network, Recursive Neural Network,

Text Books:

Stuart Russel and Peter Norvig, Artificial Intelligence, A modern Approach, 3rd Edition

Reference Books:

- Michael J. Wooldridge, Reasoning about Rational Agents.
- Jack Minker, Logic Based Artificial Intelligence.
- Steven Michael LaValle, Planning Algorithms

Course Title: Industrial Internet of Things (IIoTs)
Course Code: EEI-411
Credit Hours: 3+1
Prerequisite: Object Oriented Programming and Data Communication.

COURSE LEARNING OUTCOMES (CLOS):
By the end of the course, students should be to:

CLO 1	Understanding of pervasive connectivity, storage, and computation to give different IoT based solutions for real world systems.
CLO 2	Students will acquire knowledge necessary for remote monitoring and control of industrial manufacturing/operations facilities through experiential learning as well as remote health monitoring and emergency notification systems, and transportation systems.
CLO 3	Implementation of Multi-Node IoT Solutions and analyze data in the Cloud.
CLO 4	Design of based IoT solutions utilizing IoT sensors, data collection in the Cloud.

MAPPING OF CLOS TO PLOS (PROGRAM LEARNING OUTCOMES):

PLOs		CLOs			
		CLO 1	**CLO 2**	**CLO 3**	**CLO 4**
PLO 01	Engineering Knowledge	✓	✓		
PLO 02	Engineering Problem Analysis				
PLO 03	Designing and Development				✓
PLO 04	Investigation				
PLO 05	Modern tool usage			✓	
PLO 06	Engineer and Society				
PLO 07	Environment and sustainability				
PLO 08	Professionalism and Ethics				
PLO 09	Communication				
PLO 10	Individual and Team Work				
PLO 11	Life-long learning				
PLO 12	Project Management				

Content:

Internet of Things (IoT)

- What Is the Internet of Things?
- Machine to Machine / User-less Communication
- Common Use Cases
- Components of an IoT Solution
- Open Source and Commercial Examples
- Competing Standards for IoT
- IoT specialization: Industrial, Medical/Healthcare, Automotive, Energy/Utilities, Financial

Acquiring Data

- Traditional Data Storage
- Analog and Digital I/O Basics
- Sensors and Data Collection Points
- Embedded Platforms / Microcontrollers
- Software Development
- Device Security: Physical and Logical
- Connectivity Options
- Connecting Sensors to the Cloud
- Scaling Number of Sensors

Utilizing Data

- Collecting and Storage of IoT Sensor Data
- Data Aggregation
- Processing IoT Data
- Privacy and Security
- Analysis and Visualization of Data
- Cloud and IoT
- Big Data and IoT
- Use Cases for IoT Data

Implementing IoT

- Embedded Operating Systems
- Linux and Windows-Based IoT
- Cloud-based Data Collection
- On-Going IoT Operations

IoT Analytics

- ETL (Extract-Transform-Load)
- Combining IoT Data with Static Data
- Scripting and Programming with IoT Data
- Machine Learning / Artificial Intelligence

Bringing It Together

- IoT Strategies
- IoT Governance and Management Strategies

What's Next in IoT

Text Book:

- "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press).

Reference Book:

- "Internet of Things: A Hands-on Approach", by Arshdeep Bahga and Vijay Madisetti (Universities Press).

Course Title: Mobile Application and Development
Course Code: CSC 341
Credit Hours: 3+0
Prerequisite: Programming Fundamentals

COURSE LEARNING OUTCOMES (CLOS):
By the end of the course, students should be to:

CLO 1	Describe and compare different mobile application models/architectures and patterns.**C1**
CLO 2	Apply mobile application models/architectures and patterns to the development of a mobile software application **C2, C3**
CLO 3	Solve problems in the professional field on the basis of analysis ~~and synthesis~~ **C3, C4**

MAPPING OF CLOS TO PLOS (PROGRAM LEARNING OUTCOMES):

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		CLO 1	**CLO 2**	**CLO 3**
PLO 01	Engineering Knowledge	✓	✓	
PLO 02	Engineering Problem Analysis			✓
PLO 03	Designing and Development			
PLO 04	Investigation			
PLO 05	Modern tool usage		✓	
PLO 06	Engineer and Society			
PLO 07	Environment and sustainability			
PLO 08	Professionalism and Ethics			
PLO 09	Communication			
PLO 10	Individual and Team Work			
PLO 11	Life-long learning			✓
PLO 12	Project Management			

Contents:

- Mobile Development Concepts
- Activities
- Resource Management and Media
- Services and Content Providers
- Data Storage
- Security
- Managing Evolution
- Tablets Graphics
- Speech Sensors Networking
- Processes and Threads
- Deployment

Software used
Apache Cordova

Text Books:

- Android Wireless Application Development, third edition, Lauren Darcey, Shane Conder, Addison Wesley, 2012, ISBN 0321813839 38
  Mobile Design and Development: Practical concepts and techniques for creating mobile sites and web apps, by Brian Fling Publisher: O'Reilly Media, 200