PANDIT DEENDAYAL PETROLEUM UNIVERSITY, GANDHINAGAR

SCHOOL OF TECHNOLOGY

Department of Computer Science and Engineering / Department of ICT

Minutes of the Board of Studies Meeting of CE and ICT programme

The meeting of the Board of studies of the Computer Engineering and Information and Communication Technology (ICT) Programme of CSE and ICT Department was held on **01st May 2019 at 4:00 pm** in E-Block Committee Room of SOT building PDPU. Dr. Tajinder Pal Singh, HOD of CSE/ICT Department chaired the meeting. The following members were present in the meeting:

Dr. Tajinder Pal Singh	Director, SOT	
Dr. D. M. Parikh	Dean, FOET	
Dr. Tajinder Pal Singh	HOD, CSE Dept.	Chairman (BOS)
Computer Engineering		
Dr. Vibha Patel	Professor, VGEC, Chandkheda	External Member
Dr. Asim Banerjee	Professor, DAIICT	External Member
Mr. Indrajit Mitra*	Co-Founder, Jt. Managing Director, Gateway Technolabs	Professional Member
Mr. Harish Chib	Vice President, Sophos Technologies Pvt. Ltd.	Professional Member
Dr. Samir B. Patel	Assistant Professor, CE, PDPU	Internal Member
Dr. Manish Chaturvedi	Assistant Professor, CE, PDPU	Internal Member
Information and Communication Technology		
Dr. Darshak Thakore*	Professor and Head, BVM.	External Member
Dr. Zunnun Narmawala	Associate Professor, Nirma University	External Member
Mr. Chirag Dhebar*	Global Head, Global Consulting Practice, ERP, Transformation Group, TCS	Professional Member
Mr. Amit Rawat*	Scientist SC, ISRO, Ahmedabad	Professional Member
Dr. Gangaprasad Pandey	Assistant Professor, ICT, PDPU	Internal Member
Dr. Jigar Shah	Assistant Professor, ICT, PDPU	Internal Member

Following other members were present in the meeting:
Dr. Mehul Rawal, Dr. Mazad Zaveri, Dr. Paawan Sharma, Dr. Dinesh Kumar, Dr. Nishant Doshi, Dr. R. Jothi, Dr. Reema Patel, Dr. Santosh Bharti, Dr. Raju Ranjan

* Following members could not attend the meeting:

- Dr. Darshak Thakore (Professor and Head, BVM)
- Mr. Indrajit Mitra (Co-Founder, Jt. Managing Director, Gateway Technolabs),
- Mr. Chirag Dhebar (Global Head, Global Consulting Practice, ERP, Transformation Group, TCS)
- Mr. Amit Rawat (Scientist SC, ISRO, Ahmedabad)

The following points were discussed in the meeting:

- Approved the minutes of the previous BOS meeting.

  A few points discussed in the previous BOS meeting were not considered.
- Comprehensive project and Major project should have same credits and so the only comprehensive project name should be reflected in 8th Semester for both CSE and ICT. (Industry/University)
  - Students of final year were invited to take the feedback by the BOS members and based on that, it was decided to keep it of same credit.
- Mini Project credit (0-0-8) of 7th semester is updated to (0-0-14) i.e. 4 credit course is now made to 7 credit course for both CSE and ICT.
- BOS members suggested that students should not be allowed to take Open Elective(s) offered by the home department.
- Instead of Project management course in 7th Semester, it should be replaced by Internet of Things subject as core in CSE Department and course on Security in IOT should be dropped.
- Project Management course in 7th semester is replaced with Machine Learning course as core in ICT Department.
- Elective basket (5 and 6) of 8th semester should be merged with elective basket (3 and 4) of 7th semester as far as possible.
- As per University requirement Communication skills of 1st semester (2 credit) to be spread across 3 years of one credit each. (effective for 2019 intake)
  - To adjust communication skills credit in third year (CSE), Wireless Technology and Mobile Computing course of 6th semester for CSE Department, credit is reduced from 4-0-0 to 3-0-0.
  - To adjust communication skills credit in third year (ICT), Wireless Communication and Coding course of 6th semester for ICT Department, credit is reduced from 4-0-0 to 3-0-0.
- BOS suggested that for 6th semester Industrial Training/Internship during summer break after 6th Semester, students can pursue appropriate duration training program on campus (Conducted by Industry and academia).
- B. Tech Minor in Computer Engineering and B. Tech Minor in ICT courses were discussed and it was suggested that course basket should be identified from NPTEL/SWAYAM/etc. considering 3 to 4 subjects as core and other subjects identifying the applications depending upon the branch. (Total credits of Minor should be 20 credits of approximately 7 subjects).
  - Students may be allowed to sit through the classes of the same courses in ongoing semester.
- Smart Sensors & IOT subject is replaced with Digital VLSI Circuits and HDL in ICT Department for 7th Semester as core along with its laboratory.
- Information Security Lab is dropped to accommodate Machine Learning course as core in 7th Semester ICT Department.
- Theory of Automata and Computation course is added in the elective basket (3 and 4) for ICT 7th Semester.
- Subjects in the Elective baskets are permitted to change as per the Industry relevance.
- Members of BOS suggested making the changes in ICT curriculum in similar lines of Computer Engineering.

The above points are summarized in the tabular format for CSE Department as suggested by the FOET as follows:

Sr. No.	Semester	Course & course code	Addition/deletion of subject/topic	Justification
1	**I**	Communication Skills	Credits reduced by 1 credit, and course renamed to communication Skill-1	w.e.f. 2019 intake: As per University requirement, Communication skills which is offered in first year of two credits is divided into three consecutive years (Sem1, Sem 3 and Sem5) of one credit each.
2	**III**	Communication Skills II	Added a subject of 1 credit	w.e.f. 2019 intake: As per University requirement, Communication skills which is offered in first year of two credits is divided into three consecutive years (Sem1, Sem 3 and Sem5) of one credit each.
3	**V**	Communication Skills III	Added a subject of 1 credit	w.e.f. 2019 intake: As per University requirement, Communication skills which is offered in first year of two credits is divided into three consecutive years (Sem1, Sem 3 and Sem5) of one credit each.
4	**VII**	Project Management	Project management subject is dropped.	Due to the content redundancy with software engineering course in 5th semester, this subject is dropped.
5	**VII**	19CP403-Internet of Things	course on Internet of things (3-0-0) is added	To meet the Industry requirement this course is added as core course. (moved from elective basket to core course)
6	**VIII**	Semantic Web and Social Network	Dropped from Elective Basket	Considering the market reputation, this course is not in demand and hence it is dropped.
7	**VIII**	Security in IOT	Dropped from Elective Basket	IOT course is already offered in 7^{th} semester and is prerequisite for this course. Also if it is offered, there would be lot of overlap in course contents.

8	**VII**	Computer Vision	New elective added	Fits well with the courses *Machine Learning* and *Artificial Intelligence* and Natural Language Processing
9	**VII**	Statistical Pattern Recognition	New elective added	Revised title of the old course *Pattern Recognition of 8th semester and moved to Elective 3 and 4 Basket (7th Semester)*
10	**VII**	ICT for Energy Sector	New elective added	Revised title of the old course *Smart Energy Management Systems of 8th semester and moved to Elective 3 and 4 Basket (7th Semester)*
11	**VII**	Green Computing	New elective added	Moved from semester 8 to Semester 7 for having only comprehensive project in 8th Semester
12	**VII**	Human Computer Interaction	New elective added	Moved from semester 8 to Semester 7 for having only comprehensive project in 8th Semester
13	**VII**	Statistical Pattern Recognition	New elective added	Moved from semester 8 to Semester 7 for having only comprehensive project in 8th Semester
14	**VII**	Information Retrieval System	New elective added	Moved from semester 8 to Semester 7 for having only comprehensive project in 8th Semester
15	**VII**	Block Chain Technology	New elective added	Moved from semester 8 to Semester 7 for having only comprehensive project in 8th Semester
16	**VII**	Mini Project	Credit of 0-0-8 is made to 0-0-14	4 credit is increased to 7 credit in Mini project and Seminar component is merged with Mini Project, so as to give more hands-on experience.

17	**VIII**	Seminar	Course Removed	BoS suggested that it would be infeasible for most of the off-campus students to come for Seminar evaluation at the campus. Hence these credits were transferred to Mini Project in 7th semester, to improve their hands-on experience
18	**VIII**	Elective V	Elective Course Shifted	Based on the recommendations of BoS, the elective courses of 8th semester were shifted to the 7th semester
19	**VIII**	Elective VI	Elective Course Shifted	Based on the recommendations of BoS, the elective courses of 8th semester were shifted to the 7th semester
20	**VIII**	Major Project	Dropped major project	As per the BOS recommendation Major project and Comprehensive project should have same credit. Earlier CP was 19 credit and Major project was 13 Credit, along with Major Project two elective courses were there of 3 credit each. Therefore Major Project is dropped along with Elective 5 and Elective 6, to keep only Comprehensive Project with 19 Credits. The subjects of Elective 5 and Elective 6 are merged with Elective 3 and Elective 4 of 7^{th} Semester.

The above points are summarized in the tabular format for **ICT Department** as suggested by the FOET as follows:

Sr. No.	Semester	Course & course code	Addition/deletion of subject/topic	Justification
1	**I**	Communication skills	Credits reduced by 1 credit, and course renamed to communication skills -I	w.e.f. 2019 intake: As per University requirement, Communication skills which is offered in first year of two credits is divided into three consecutive years (Sem1, Sem 3 and Sem5) of one credit each.
2	**III**	Communication skills-II	New course added	w.e.f. 2019 intake: As per University requirement, Communication skills which is offered in first year of two credits is divided into three consecutive years (Sem1, Sem 3 and Sem5) of one credit each.
3	**V**	Communication skills-III	New course added	w.e.f. 2019 intake: As per university guidelines
4	**VII**	Digital VLSI Circuits and HDL	Subject added as core, instead of *Smart Sensors and IoT (4-0-0)*	The old course *Smart Sensors and IoT*, is redundant. The new course will provide exposure to students, in electronic system design: (low-level) transistor-level CMOS design and (high-level) HDL based design
5	**VII**	Digital VLSI Circuits and HDL LAB	Laboratory Subject added as core, instead of *Smart Sensors and 7IoT LAB (0-0-2)*	As above
6	**VII**	Machine Learning	Subject added as core (4-0-0)	This course would be more relevant and useful to the students (as the world is moving towards AI based systems and solutions)
7	**VII**	Project Management	3 Credit Course removed (3-0-0)	To accommodate the course: *Machine Learning*
8	**VII**	Information Security LAB	One Credit Course removed (0-0-2)	To accommodate the course: *Machine Learning*

9	**VII**	Internet of Things	New elective added	This course would cover the topics left out from the removed course Smart Sensors and IoT, and also provide the introductory concepts of cloud and data analytics, that go along with the hardware and CS perspective of IoT domain
10	**VII**	Theory of Automata and Computation	New elective added	This course would be useful to students, who want to pursue higher studies in the domain of Computer Sciences
11	**VII**	Computer Vision	New elective added	Fits well with the courses *Machine Learning* and *Artificial Intelligence* and natural language processing
12	**VII**	Statistical Signal Processing	New elective added	This could would be more relevant for learning adaptive signal processing.
13	**VII**	Fundamentals of Remote Sensing	Revised title of the old course *Remote Sensing*	Contents are modified and generalized for offering the course to students from both programs (ICT and CE)
14	**VII**	Mini Project	Credit of 0-0-8 is made to 0-0-14	4 credit is increased to 7 credit in Mini project and Seminar component is merged with Mini Project, so as to give more hands-on experience.
15	**VII**	Advanced Operating Systems	New elective added	This course was already offered to CE program. And now it would be opened to ICT students.
16	**VII**	Real-Time Operating Systems	Elective removed	Some of the contents of this course would be covered though the 7th semester elective *Advanced Operating Systems*
17	**VIII**	Multimedia Systems	Elective removed	Most of the contents are overlapping with other electives, such as: Image processing, Computer Vision, Statistical Signal processing, etc.

18	**VIII**	Statistical Pattern Recognition	Revised title of the old course *Pattern Recognition*	This would be a more generic and acceptable title. Moved from semester 8 to Semester 7 for having only comprehensive project in 8th Semester
19	**VIII**	VLSI Technology	Elective removed	The current ICT program does not have courses on semiconductor devices/physics, which would be a pre-requisite to this course.
20	**VIII**	ICT for Energy Sector	Revised title of the old course *Smart Energy Management Systems*	The new title justifies the contents of the course, Moved from semester 8 to Semester 7 for having only comprehensive project in 8th Semester
21	**VIII**	Major Project	Course Removed	As per the BOS recommendation Major project and Comprehensive project should have same credit. Earlier CP was 19 credit and Major project was 13 Credit, along with Major Project two elective courses were there of 3 credit each. Therefore Major Project is dropped along with Elective 5 and Elective 6, to keep only Comprehensive Project with 19 Credits. The subjects of Elective 5 and Elective 6 are merged with Elective 3 and Elective 4 of 7th Semester.
22	**VIII**	Seminar	Course Removed	BoS suggested that it would be infeasible for most of the off-campus students to come for Seminar evaluation at the campus. Hence these credits were transferred to Mini Project in 7th semester, to improve their hands-on experience
23	**VIII**	Elective V	Elective Course Shifted	Based on the recommendations of BoS, the elective courses of 8th semester were shifted to the 7th semester

24	**VIII**	Elective VI	Elective Course Shifted	Based on the recommendations of BoS, the elective courses of 8th semester were shifted to the 7th semester
25	**VIII**	Security in IoT	Elective course removed	Not appropriate to run this course without learning the pre-requisite course (IoT)

B. Tech (Minor in ICT) / B. Tech (Minor in CE) (With effect from 2019 Batch)

- Student from B. Tech ICT program will not be allowed to do Minor in CE; Similarly student from B. Tech CE program will not be allowed to do Minor in ICT.
- Student from (non-CSE and non-ICT) B. Tech programs, will be eligible for B. Tech (Minor in ICT) / (Minor in CE). Student will have to take extra 20 credits for the minor; These 20 credits would be in addition to 180 credits of the B. Tech program.
- Student will NOT be allowed to take existing courses of the B. Tech ICT/CE programs at PDPU, towards completing the additional 20 credits.
- The student has to complete these 20 extra credits, through MOOC courses, from NPTEL, or other equivalent and recognized MOOC sources: Coursera, Udacity, MIT. (Note that, MOOC courses from sources other than NPTEL will be subject to approval by B. Tech ICT/CE program convener.)
    - Each MOOC course should be of atleast 12 weeks (to be considered equivalent to 3 credits); at the end of the MOOC course, certificate or proof of successful completion and related grade, has to be submitted by the student to B. Tech ICT/CE program convener.
    - The student who wishes to enroll for the B. Tech (Minor in ICT) / B. Tech (Minor in CE), has to apply for the same, with a proposed list of MOOC courses and sources to the B. Tech ICT/CE program convener. If approved by the B. Tech ICT/CE program convener, the student can proceed with the MOOC courses, subject to submission of the proof of successful completion and related grade of the MOOC.
    - Student has to complete these additional 20 credits during the 4 years of the program.
    - Suggested list of MOOC courses (related areas) are given below, for Minor in ICT / Minor in CE:

Minor in ICT (MOOCs have to be substantially different from the courses already taken at PDPU by the student)	**Minor in CE** (MOOCs have to be substantially different from the courses already taken at PDPU by the student)
Area: Programming, Circuit Analysis and Digital Logic/Electronics, Signals and Systems, Computer Organization/Architecture; Microprocessors, Computer Networks, IoT	Area: Programming, Data Structures and Algorithms, Operating Systems, Software Engineering, DBMS, Computer Networks, Open Source Technologies, Web Technologies
• Discrete Mathematics • Introduction to Internet of Things • Computer Architecture • Artificial Intelligence Search Methods for problem Solving • Switching Circuits and Logic Design • Hardware Modeling using Verilog • Embedded Systems-- Design Verification and Test • Analog Communication • Principles of Digital Communications • Introduction to Wireless and Cellular	• Computer Architecture and Organisation • Database Management System • Design and Analysis of Algorithms • Programming, Data Structures and Algorithms using Python • Problem solving through Programming In C • Data Science for Engineers • AI: Knowledge Representation and Reasoning • Cryptography and Network Security • Big Data Computing • Cloud Computing

Communications • Fiber-Optic Communication Systems and Techniques • Computational Electromagnetics & Applications • Computer Networks and Internet Protocol • Deep Learning • Digital Signal Processing • Signals and systems • RF Antenna Design • Digital Image Processing • Database management Systems • Object Oriented concepts • Sensors Technology	• Introduction of Internet of Things • Machine Learning for Engineering and Science Applications

The meeting ended with a Vote of Thanks from Prof. T. P. Singh.

Sd/-
Dr. T. P. Singh
Chairman BOS (CSE and ICT)