



JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY

(Established by H.P. State Legislature vide Act No. 14 of 2002)
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MINUTES OF THE ACADEMIC COUNCIL MEETING - 02 DEC 2017

Academic Council meeting was held on 02 December 2017 at 10.30 am in the Board Room, JUIT Wagnaghat. The following were present:

Chairman

Prof. Vinod Kumar, Vice Chancellor, JUIT Wagnaghat

Head Of Other Institutions of the Trust

Prof. S.C. Saxena, Vice Chancellor, JIIT Noida

Industry Professional

Sh. Vinod Sharma

Deans

Prof. Samir Dev Gupta

HoDs

Prof. S.V. Bhooshan Dept. of ECE

Prof. S.P. Ghrera Dept of CSE

Prof. Ashok Kumar Gupta Dept of CE

Dr. Sudhir Kumar Dept of BT/BI

Prof. Karanjeet Singh Dept of Maths

Prof. P.B. Barman Dept of PMS

Dr. Anupriya Kaur Dept of HSS

Professors

Prof. Sunil Kumar Khah Dept of PMS & COE

Non-Member Secretary

Maj Gen Rakesh Bassi, SM (Retd) Registrar and Dean of Students

Leave of Absence

Leave of absence was granted to the following members by the Chairman Academic Council:

1. Sh. Sunil Sharma
2. Prof. Manoj Kumar Arora
3. Prof. Padam Kumar
4. Prof. Veeresh S. Gali

The Chairman welcomed all the members who were present for the meeting. Chairman welcomed Maj Gen Rakesh Bassi (Retd) Registrar and Dean of Students who has taken over as the new Non Member Secretary wef 01 August 2017. He further appreciated and thanked the contribution made by Brig KK Marwah (Retd), predecessor of current Non Member Secretary of the Academic Council for his contributions. The meeting thereafter deliberated on agenda items as had been approved by the Chairman.

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Item No. 1 Confirmation of Minutes of Last Meeting of the Academic Council held on 19 December 2016

Confirmed

Item No. 2 Action Taken Report

Prof. S.C. Saxena appreciated and put on record the excellent work done by the Vice Chancellor, JUIT and his team for timely action taken on decisions arrived at the last Academic Council Meeting held on 19 December 2016.

Item No. 3 Academic Documents Authentication and Inclusion

The proposal was accepted with following suggestions by Prof. S.C. Saxena:-

- a) The final transcript of a student should include the year of admission and the year of passing of degree as is being done in JIIT Noida.
- b) Degrees in a year should be awarded to the eligible candidates if they fulfill the requirements for the award of degree up to 30 September of the current academic year and all other candidates degree should be awarded in the next academic year.

The Item was approved.

Item No. 4 Revision in Eligibility Conditions for Faculty Promotion

It was deliberated that faculty contribution in their respective Departmental activities with due recommendations of the HoD to find adequate weightage for promotion. This will be over and above to the existing minimum eligibility criteria specified for career progression.

The Item was approved.

Item No. 5 Admission in Different Programs of the University during Academic Session 2018-19 for Approval of the Academic Council

Prof. S.C. Saxena stated that increase in the number of seats for B Tech CSE from 180 to 240 and also in B Tech (IT) from 30 to 60 as proposed in the agenda item was a step in the right direction keeping the national trend of students aspiring to join the IT Sector into account. Total number of seats approved were 570, which also includes reduction in number of seats in the Department of ECE from 120 to 90. Other braches viz. BT, BI & CE to maintain the number of seats as it exists.

The Item was approved.

Item No. 6 Provision of Lateral Entry in 3rd Semester for filling the vacant seats in the respective departments for the B.Tech programs in BI, BT, CE, CSE, ECE & IT in the Academic Session 2018-19

The Chairman explained the proposal of Lateral Entry for the existing B.Tech program. It was proposed primarily to ensure that a class strength be

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maintained at approved strength for all the four years. Keeping in mind the existing financial liability, it would also compensate for loss of revenue, which otherwise would continue to be the same up to the 4th year completion of the batch for all vacant seats.

During the discussion for eligibility criteria for lateral entry, Prof. S.K. Khah suggested that for Diploma holders who have completed diploma after 10th class, be permitted to submit Class 10th original mark sheet whilst for B.Tech Lateral Entries, 10+2 original marks sheet for verification would be mandatory, as proposed. The point was agreed to.

The Item was approved along with above suggestion.

Item No. 7 Fee Structure for Ph.D. Scholars on Submission of Thesis

As recommended was approved.

Item No. 8 Modification in Guidelines for Payment of Fellowships to Full Time Ph.D. Scholars

As recommended was approved.

Item No. 9 Revision of B.Tech Course Curricula

After discussions, Prof. S.C. Saxena stated that for engineering students, in most of the IITs and other premier Institutes range of total credits is between 150 to 160 and additional 20 credits ex-MOOCs. The trend in higher education is to focus on making the students as self learners with teachers acting as facilitators. Towards this end, the contact hours of student with teacher are to be reduced. Student should be encouraged to be more innovative and creative. The teachers should be approachable for students to come up to them and interact with them, thus ensuring that a teacher instead of being a controller is a facilitator. Prof. S.C. Saxena also highlighted the need for innovative approaches to be encouraged and to avoid casting the students in a defined mould only.

As regards CSE, he stressed on the need for enhancing the programming skills of students. He stated that as per the statistics of placements, it is quite evident that students with higher programming skills are getting better placement packages. Therefore, there is a need to motivate students to opt for programming skills and weightage of such subjects should be increased.

As a concept for B.Tech, he mentioned that the basic core structure of each department should be fixed and the department should then decide what is required to be taught. This should be commensurate and in consonance with the current trend in vogue. As regards 1st year students, the UGC guidelines state that they should be exposed to three programmes during Orientation. These programs should include physical activities, creative arts, local visits etc. The details of these programs are available on the UGC/AICTE websites.

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As regards weightage of various programs as 176 credits course listed in the Table in Item No. 9 of the Agenda, Prof SC Saxena suggested the range of credits be amended and the revise B Tech course structure with 165 Credits should be as per **Appendix-A** attached.

The Revised Structure was approved.

Item No. 10 B. Tech Structure for Admission of 2017-18

Discussion took place for Department of Humanities & Social Sciences based on point projected by HOD, HSS regarding electives. Prof. S.C. Saxena suggested introduction of certain value added courses which are non credit, but must be made compulsory. These could be value added course on subjects like Ethics and Foreign Languages such as German, French etc . Further as per the recommendations of Regulatory bodies during their expert committee visits to the University, it was recommended to include CBCS system in existing B Tech Structure. Therefore, B Tech Structure for admission in 2017 – 18 has been revised to include CBCS system as given in **Appendices B to F** attached.

The Item was approved.

Item No. 11 Modification/New Course/New Electives for B.Tech 2017-18

As recommended was approved.

Item No. 12 Introduction to MOOCS Courses

As recommended was approved.

Item No. 13 Introduction of New M.Sc. Programs and Revision in M.Tech Structures

As per UGC guidelines and NAAC Team visit, there is a need to introduce post graduate programs in disciplines in which PhD are being conducted. Accordingly Departments have proposed some new programs at post graduate level. Further, Departments have also proposed modifications in the existing M.Tech Program structures.

The Dept. of PMS has proposed a new two- year program, M Sc. in Physics from July 2018 with 75 credits. The program will focus on the basics and application of physical sciences, specially Nanotechnology, Materials Science, Electronics etc. The program stresses on interdisciplinary fields like modeling, simulation and extensive laboratory and Project work. The courses will prepare students for research and career in an industrial or national research laboratory environment. The course designed provides a platform for the research in cutting edge technology and it covers all the aspects of national examination of repute like GATE, NET.

The Dept. of Mathematics has proposed to start a new two-year M.Sc.

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Program in Mathematics from July 2018 (75 credits). This program blends relevant mathematics covering theoretical, computational and practical aspects. The core mathematics courses are aimed at building a strong foundation in the subject. In addition to the usual course work it also involves pursuing one-year project work during the second year. The program allows opting courses from a variety of electives together with the compulsory ones. The performance of students in each semester shall be continuously assessed through regular quizzes, class tests etc. besides usual three university examinations in a semester.

The Dept. of BT/BI has proposed to start a new two-year M.Sc. Program in Biotechnology & Bioinformatics from July 2018 (86 credits).

The Dept of CSE proposed to introduce a two year M Tech in Computer Science Engineering (Information Security) in addition to the ongoing M.Tech in CSE program.

After discussions it was agreed that the 86 Credits new M.Sc. Course proposed by the Department of BT & BI should be modified to 75 Credits as proposed by the Department of Physics & Materials Science and Dept. of Maths for new M.Sc. programs since these were as per the norms.

It was also deliberated that the introduction of new M.Sc. Programs should be effected only after approval from the Chairman, Governing Council.

The Item was approved by the Academic Council.

Item No. 14 Inclusion of Award of a Degree with Honours

Approved wef the 2014 – 18 batch onwards.

Item No. 15 For Fast Learners, Provision for registering for extra credits during 3rd year in order to have lesser academic load in the 4th year to take up coaching for GRE, CAT, MAT & GATE exams.

As recommended was approved.

Item No. 16 Evaluation System for Supplementary Examination from 2017 Odd Semester onwards

As recommended was approved.

Item No. 17 Minutes of the Meeting of BOS of Various Departments for Approval

As recommended was approved.

Item No. 18 Proposal for Framing Regulations and Ordinances for JUIT

The following amendments were suggested

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- a. The agenda item at serial 18 (a) to be amended to read Jaypee University of Information Technology has a booklet comprising (i) Academic System **(All Programs) in lieu of Academic System (B Tech)**.
- b. The agenda item at serial 18 (b) of Agenda mentions Jaypee University of Information Technology has a **Rule Book**. This was discussed and decision was arrived to rename the document as **Service Regulations**. Shri Vinod Sharma sought clarification that if the Rule Book was any different from those in other Jaypee Group establishments. Prof SC Saxena explained why the Regulations of Academic Institutions are to be different than Project sites because of the peculiarities involved.
- c. It was approved that the Academic System can have one book called **Ordinances and Regulations as at Appendix-G** whereas the second book will cover the **Service Regulations** which have already been approved in the Governing Council Meeting of 23 November 2014.

The Item with above modifications was approved

Item No 19 Reporting Items

No comments

Item No 20 Any Other Item with the Permission of the Chair

1. The proposal of HOD PMS for appointing Prof(Dr) Sukumar Basu as Emeritus /Honorary Professor of PMS was discussed and it was decided that the Professor be appointed as Professor Emeritus with well defined terms and conditions.
2. The Chairman put forth the need for Inter Department Research Collaboration requirement as pointed out by NAAC also. He proposed for four Centres of Excellence to be established as follows:-
 - (a) Centre of Excellence in Structural Engineering
 - (b) Centre of Excellence in Internet of Things(IOT)
 - (c) Centre of Excellence in Healthcare Technologies and Informatics.
 - (d) Centre of Excellence in Sustainable Technologies for Rural Development (Smart Villages)

Prof Saxena advised that JUIT should concentrate on those disciplines which are more focussed and relevant to HP State as this will improve the image and visibility of JUIT in the region. Shri Vinod Sharma mentioned that he can use his good offices at Shimla to get these projects presented to the HP Govt. so that they find a favorable response from them if they are correctly sensitized on the feasibility of these projects.

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The proposals of the Item were approved

**There being no other points the meeting concluded at 12.45 pm with a
Vote of Thanks by the Chairman to all Academic Council Members.**



**Maj Gen Rakesh Bassi. SM (Retd)
Registrar & Non-Member Secretary**

Confirmed



**Prof Vinod Kumar
Vice Chancellor & Chairman**

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY WAKNAGHAT
Department of Civil Engineering
Minutes of the BOS meeting

Venue: Board Room JUIT Waknaghat
Date: 08/11/2017
Time: 15:00 Hrs

The following were present in the meeting:

Prof. Ashok Kumar Gupta	HOD CE, Chairman
Prof. S. K. Singh	External Expert, Member
Prof. S. P. Ghrera	HOD CSE/IT, Member
Prof. Karanjeet Singh	HOD Mathematics, Member
Prof. Sudhir Kumar	Acting HOD BT/BI, Member
Dr. Anupriya Kaur	HOD HSS, Member
Prof. Veeresh Gali	Member
Dr. Ashish Kumar	Member
Dr. Rajiv Ganguly	Member
Dr. Gyani Jail Singh	Member Secretary

Dr. Yeshpal Vasishta and Ms. Surabhi Sharma, members, could not make it to the meeting.

Agenda 1: To discuss and approve the new Civil Engineering (B. Tech.) scheme.

Resolution: All the members present were of the firm opinion that B. Tech Civil Engineering Scheme should be of 176 Credits.

The new Civil Engineering B. Tech. scheme [Annexure I] of 176 credits was discuss and approved with few comments as:

- (1) The credits of all courses of HSS and basic sciences must be fixes centrally
- (2) The courses of Water Resources Engineering and Irrigation Engineering may be clubbed together.
- (3) During first year a course like introduction to civil engineering may be included in order to strengthen the departmental level orientation

It was also approved that the present 195 credit B. Tech Civil Engineering scheme should be revised in order to make it Choice Based Credit System (CBCS) scheme w.e.f. academic session 2017-18. The approved scheme is attached in Annexure II.

Agenda 2: To discuss and approve restarting of the lateral entry scheme at B. Tech. (CE) for diploma students.

Resolution: It was discus and approved.

Agenda 3: To discuss and approve the completion of theory/lab courses in the Ist and IInd semester only for M. Tech.

Resolution: It was approved.

Agenda 4: To discuss and approve the minimum requirement of research papers for the award of the M. Tech. Degree, particularly if only thesis work in 2nd year.

Resolution: After detail deliberation it was not approved.

Agenda 5: To consider and approve the unpaid Indian Citation Indexed (ICI) and UGC approved journals for the award of the Ph. D. Degree.

Resolution: It was approved that unpaid Indian Citation Indexed (ICI) Journals and unpaid UGC approved Journals should also be considered for the award of the Ph. D. Degree.

Minutes of the Meeting

2017 Department of Computer Science & Engineering and Information Technology Engineering

Minutes of the meeting of Board of Studies in Computer Science & Engineering Department held on 18th November 2017 at 11:30 AM in the Board Room, Jaypee University of Information Technology, Wagnaghat. The following members were present:

1. Prof S P Ghrera, HOD CSE/IT Dept (Chairperson)
2. Dr. Vivek Sehgal
3. Dr. Hemraj Saini
4. Dr. Pardeep Kumar
5. Dr. Pradeep Kumar Singh
6. Dr. Shailendra Shukla
7. Dr. Ravindra Bhatt
8. Dr. Amit Kumar Singh
9. Dr. Suman Saha
10. Dr. Punit Gupta
11. Dr. Yugal Kumar
12. Prof Dr. Mayank Dave, NIT Kurukshetra
13. Prof Dr. Manu Sood, Director, UIIT, HP University
14. Nominees from the departments of Electronics & Communication Engineering, Civil Engineering, Bio-Technology/Bio-Informatics, Mathematics, Physics, and Humanities & Social Sciences.

RESOLUTIONS:

1. It was suggested by Prof Mayank Dave (external member) to increase the intake of B Tech CSE and B Tech IT only if there is a sufficient number of hostels, classrooms, tutorial rooms, and laboratories to accommodate them. He also suggested increasing the number of faculty members.

Since new classrooms and labs have been developed, CSE/IT department is now in a position to accommodate the increased intake of students. Moreover, the department of CSE/IT has recently recruited six faculty members and is still in the process of advertising for more recruitment.

In view of the above plan, it was resolved to increase the intake of B Tech (CSE) students (from 180 to 240) from 2018 batch onwards.

2. It was also resolved to increase the intake of B Tech IT students (from 30 to 60) from 2018 batch onwards.
3. It was resolved to change the title of the programme M Tech CSE (Software System Security) to M Tech CSE (Information Security) as suggested by last Academic Council, and to offer the course from July 2018.

4. It was resolved to introduce following three elective courses for B Tech CSE/IT.

- i. Computer Game Design
- ii. Design and Analysis of Real World Algorithms
- iii. Mobile and Distributed Computing

It was suggested by Prof Manu Sood and Prof Mayank Dave (external members) to reduce some contents of the course "Computer Game Design," in accordance with 42 lectures. Prof Mayank Dave also suggested including Routing Algorithms, Computer Graphic Algorithms, Machine Learning Algorithms, Concurrency Control Algorithms, and Gaming Algorithms in the course "Design and Analysis of Real World Algorithms." It was resolved that Mr. Puneet Jain and Dr. Suman Saha have already amended the syllabuses of the courses "Computer Game Design" and "Design and Analysis of Real World Algorithms", respectively, as suggested, and the same have been brought up for consideration. The amended syllabuses for both of the above courses were accepted and recommended (the updated and approved course descriptions for both of the courses are given in Annexure I and II).

5. It was resolved to approve the changes in the course structure of B Tech (CSE) and B Tech (IT) programs as per details given on the agendas 5 and 6, respectively. It was also resolved to allow B Tech (CSE/IT) elective courses to be offered earlier and facilitate Choice-Based Credit System (CBCS) compliance.
6. It was resolved to approve the course structure of M Tech (CSE) and M Tech (CSE Information Security) programmes as per details given on the agenda 7.
7. It was resolved to introduce the Massive Open Online Courses (MOOC) for B Tech (CSE/IT) and M Tech (CSE) students as per details given on the agenda 8.
8. It was resolved to admit Diploma/BSc non-medical students to second year B Tech (CSE) and B Tech (IT) programmes as lateral entry admission (as per UGC/AICTE guidelines).

9. The recommendations of “report on the analysis of the feedback received from stakeholders” were approved in the meeting.

10. Dr. Sudhir Cyal (nominee from BI/BT dept) requested to introduce a new elective course on “Python Programming” for BI/BT students.

Considering the advantages, flexibility, and demand of Python language in solving a wide variety of biological problems, it was resolved to offer “Python Programming” as an elective course for BI/BT students as per the course description attached in Annexure III.

(HOD CSE/IT)

Annexure I

“Computer Game Design (17B1WCI812)”

Course description:

This course is an introduction to current and future technologies for computer game design and scripting. Topics include graphics, game scripting, game engines, motion control, narrative in games, game interfaces, artificial intelligence, music and sound, "Serious Games" and social and interface issues of game development.

Students enrolled in Computer Game Design program will have the opportunity to learn techniques for using interactive storytelling to design games. Program coursework exposes students to design processes such as planning, prototype development, and testing. Students also learn about theoretical and conceptual understanding of the field of game design, along with practical exposure to the process of creating a game. The coursework describes the deepest and most fundamental principles of game design.

Course Objectives:

In this class

- We will discuss games and game design. It includes the history and philosophy of games, the game production process.
- We will discuss introduction to the electronic game design and development careers
- We will discover what the components of games are, and what parts of games are influenced by their design.
- We will learn several ways to approach the design of a game, and processes and best practices for prototyping, playtesting and balancing a game after it has been designed.

Student Learning Outcomes:

By the end of the Game Design course, students will demonstrate proficiency with:

- Identifying the fundamental skills and techniques of game design
- Applying the fundamental skills and techniques of game design in the construction of a game prototype
- Refining a game prototype through a productive cycle of play testing
- Participating in the iterative process in a mutually respectful, collaborative team environment
- Executing a well-planned presentation that includes an analysis of the final product and game design process
- You will be familiar with the (relatively small) body of work that is accepted in the game industry as the theoretical foundation of game design.
- You will also be comfortable enough in processes to start designing your own games, as well as critically analyzing other people's games.

Course Syllabus

Topics	HRS
1 The Role of the Game: An Advocate for the Player, An Advocate for the Player, Passions and Skills, A Play centric Design Process, Designers You Should Know, The Iterative Design Process, Designing for Innovation, Conclusions.	4
2 The Structure of Games: Go Fish versus Quake, Engaging the Player, What is a Puzzle? The Sum of the Parts, Defining Games, Beyond Definitions, Conclusions.	4
3 Working with Formal Elements: Players, Persuasive Games, Objectives, Procedures, Resources, Conflict, Boundaries, Outcome, Conclusions.	4
4 Working with Dramatic Elements: Challenge, Play, Premise, Character, Story, The Two Great Myths of Interactive Storytelling, World Building, The Dramatic Arc, Conclusions.	4
5 Working with System Dynamics: Games as Systems, System Dynamics, Deconstructing Set, Interacting with Systems, A Conversation with Will Wright, Tuning Game Systems, Table of Contents ix Conclusions.	4
6 Conceptualization: Coming Up With Ideas, Brainstorming Skills, Alternate Methods, Editing and Refining, Electronic Arts Preproduction Workshop, Turning Ideas into a Game , Where Do Game Ideas Come From?, Conclusion.	4
7 Prototyping: Methods of Prototyping, Catastrophic Prototyping and Other Stories, Prototyping Your Original Game Idea, The Design Evolution of Magic: The Gathering, Making the Physical Prototype Beer, Beyond the Physical Prototype, Conclusions.	4
8 Digital Prototyping: Types of Digital Prototypes , Using So ware Prototypes in Game , Prototyping for Game Feel , Designing Control Schemes, Prototyping Cloud , Selecting Viewpoints, x Table of Contents Effective Interface Design, Prototyping Tools, Conclusions.	4
9 Play testing: Play testing and Iterative Design, Recruiting Play testers, Conducting a Play testing Session, Methods of Play testing, 256 Why We Play Games, The Play Matrix, Taking Notes, Basic Usability Techniques, Data Gathering, Test Control Situations, How Feedback from Typical Gamers Can Help Avoid Disappointing Outcomes, Play testing Practice ,Conclusions.	4
10 Functionality, Completeness, and Balance: What Are You Testing For?, Is Your Game Functional?, Is Your Game Internally Complete?, Is Your Game Balanced? , A Conversation with Rob Pardo, Techniques for Balancing Your Game, Conclusions.	3
11 Stages of Development: Stages Defined, From Classroom to Console: Producing flow for the PlayStation, How to Make a Project Plan, Business Opportunities for Independents, Conclusions.	3
Total Hours: 42	

Evaluation scheme:

Mid Sem-1	– 15 marks
Mid Sem-2	– 25 marks
Mid Sem-3	– 35 marks
Internal Assessment(Assignments/Quizzes/attendance)	– 25 marks
Total	100 marks

Suggested Readings

The following background readings provide more detailed coverage of the course material:

Text Book(s)

- Game Design Workshop, 3rd Edition: A Playcentric Approach to Creating Innovative Games is a book on game design by Tracy Fullerton, originally published by CMP Books.

Reference Book(s)

- **A Theory of Fun for Game Design, by Koster.** This book shows the similarities between game design and education, with a good discussion of the concept of Flow. Half text and half cartoons, this short book flows nicely and can be read in the afternoon or two.
- **Understanding Comics: The Invisible Art, by McCloud.** While this book claims to be about comics, many of the lessons within can be applied to game design and other forms of art. It also happens to be a comic book itself, and fun to read.

Annexure II

“Design and Analysis of Real World Algorithms”

This course covers how algorithms and theory are used in "real-world" applications. The course will cover both the theory behind the algorithms and case studies of how the theory is applied.

Objective of the course:

Interesting algorithms arise in many real world applications in a broad variety of areas. Getting a better understanding of where and how these algorithms are used can be valuable in many ways. It can help in the teaching of algorithms by supplying up-to-date examples of the contexts in which algorithms are used. It can help make effective use of algorithms in industry by allowing better sharing of experiences. It can help motivate new problems to consider, or can improve our understanding of the models and the assumptions we make in various problem domains. It can give us a better feeling of what it takes to have industry use algorithms, and it can help us better understand what factors are important in the design of algorithms.

Outcomes:

Students will learn:

- What is the process of getting algorithms used in real world?
- How important are constants and how important are asymptotics in practice?
- Are there application domains in which algorithms should be playing a larger part?
- How do we deal with the tension between (a) creating broadly useful algorithms for generic problems, and (b) meeting the needs of a specific client?
- The real world is noisy. How should algorithms deal with noisy input data?

Course Syllabus

Topics	HRS
1. Compression algorithms: Information Theory, Huffman/Arithmetic/Gamma Codes, Context Coding/PPM, Lempel Ziv/Gzip/Burrows Wheeler, Graph Compression	5
2. Linear programming & game development: Flow problems as Linear programs Simplex, Ellipsoid and Interior point methods, Airline crew scheduling, Sudoku, Chess,	6

Candy crush	
3. Cryptographic algorithms: One-way functions, basic protocols, Number theory review: groups, fields, Galois fields, Private key cryptosystems (Block Ciphers, Rijdael), Public key cryptosystems (SSL, RSA, ElGamal, Diffie-Hellman), Kerberos and Digital Cash)	5
4. Network Algorithms: Packet forwarding, switch scheduling, traffic shaping, bandwidth partitioning, buffer management and congestion control	6
5. Machine learning algorithms: Decision Trees, Naive Bayes , Ordinary Least Squares Regression, Logistic Regression, Support Vector Machines	6
6. Algorithms for Big Data: MapReduce, Approximate Counting, Count-min Sketch, Random Walks, PageRank	4
7. Geometry and graphics: Convexity, triangulation, sweeping, spatial partitioning, Voronoi Diagram, Robot Motion Planning	5
8. Spectral Algorithms, Low rank Approximations, Random projections, Graph sparsification, Community detection	5
Total	42

Evaluation scheme:

Evaluation scheme is designed to promote and test higher level thinking skills through holistic and continuous evaluation and de-emphasis rote learning. Written exams will be designed and conducted as close/open book(s), close/open notes tests. One of the minor tests will be designed and conducted as a take home test and will be based on individual's research and literature survey. Evaluation scheme will have the following components:

T1	15
T2	25
T3	35
Teachers Assessment (i, ii, and iii)	25
(i) Mini Project	10
(ii) Quiz and Assignment	10
(iii) Attendance	5
Total	100

Books:

1. Algorithms:- S. Dasgupta, C. Papadimitrou, U. Vazirani
2. Network Algorithms:- Robert Tarzan
3. Computational Geometry: Algorithms and Applications:- Mark de Berg
4. Randomized Algorithm: Raghavan

Annexure III

“Introduction to Python Programming”

Course Credits: 3 (3-0-0)

Course Objective

The aim of this subject is to provide students with an understanding of the role computation can play in solving problems. The course covers the fundamental principles of Object-Oriented Programming and information processing techniques through Python programs. Students will solve problems, explore real-world software development challenges, and create practical and contemporary applications.

Outcomes

- Provide an understanding of the role computation can play in solving problems.
- Help students, including those who do not plan to major in Computer Science and Electrical Engineering (like BI and BT), feel confident of their ability to write small programs that allow them to accomplish useful goals.
- Position students so that they can compete for research projects and excel in subjects with programming components.

Teaching Methodology

The class will combine lectures and labs. Lectures will focus on learning the concepts and principles, and in lab sessions students will have to work individually as well as in groups who will jointly be assigned combined tasks on related problems. Focus will be on problems in the application domain of other courses being studied by the students. Overall the course will adopt a problem-solving approach using Python language. The expectation is that students will become self-sufficient in learning any programming language on their own thereafter. The topics will be discussed in an integrated manner following the principles of problem based learning.

Tools and Techniques

- You will be using the Python programming language, version 3.5.
- You are not expected to have any prior programming knowledge - this course is intended for students who have little to no experience with any programming language.

	Topics	Hrs
1	Branching and Iteration: Loops, Multiple assignment, Updating variables, The while statement, Break, etc	2
2	String Manipulation, Guess and Check, Approximations, Bisection: String manipulation, Guess and check algorithms (e.g: find Square Root etc), Approximate solutions (e.g Successive approximation), Bisection method	3

3	Decomposition and Abstractions: Divide and conquer (modules), Abstraction	3
4	Tuples, Lists, Dictionaries, Illustrative programs: Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing – list comprehension; Illustrative programs: selection sort, insertion sort, mergesort, histogram	4
5	Files, Modules, Packages: Files and exception: text files, reading and writing files, format operator. Packages. Illustrative programs: word count, copy file.	3
6	Testing, Debugging, Exceptions, Assertions: Unit testing framework (unittest), debugger for Python program (pdb), Handling an exception	2
7	Object Oriented Programming: Classes, objects, attributes and methods; defining classes; design with classes, data modeling; persistent storage of objects. OOP, continued: inheritance, polymorphism, operator overloading, abstract classes	8
8	Multithreading: Thread, Starting a thread, Threading module, Synchronizing threads, Multithreaded Priority Queue	3
9	Illustrative programs (examples): Sorting and Searching, Regular expressions (Match function, Search function, Matching vs Searching, Modifiers Patterns). Networking (Socket, Socket Module, Methods, Client and server, Internet modules)	8
10	GUI Programming: Introduction, Tkinter programming, Tkinter widgets	2
	Total	42

Evaluation Scheme:

Test 1 15 Marks

Test2 25 Marks

Test3 35 Marks

Internal Assessment (Continuous Evaluation) [Assignments, Surprise/Announced Quizzes and Attendance] 25 Marks

Total 100 Marks

Reference Books

1. Kenneth A. Lambert, The Fundamentals of Python: First Programs, 2011, Cengage Learning, ISBN: 978-1111822705.
2. Chun, Wesley. Core python programming. Vol. 1. Prentice Hall Professional, 2001.
3. Zelle, John M. Python programming: an introduction to computer science. Franklin, Beedle & Associates, Inc., 2004.
4. Gold, Steve. "Python: Python Programming Learn Python Programming In A Day-A Comprehensive Introduction To The Basics Of Python & Computer Programming." (2016).

Web References

1. <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-0001-introduction-to-computer-science-and-programming-in-python-fall-2016/index.htm>

Department of Electronics and Communication Engineering

JUIT Waknaghat

A meeting of the Board of Studies of the Department of Electronics and Communication Engineering was held on 12.05.2017 at 10:05 AM in the Board Room.

The following members were present

- | | |
|-------------------------------|-----------------|
| 1. Prof. Sunil Vidya Bhooshan | Chairman |
| 2. Prof. D.T. Shahani | External Member |
| 3. Prof. R.C. Jain | External Member |
| 4. Dr. Ghanshyam Singh | Member |
| 5. Dr. Rajiv Kumar | Member |
| 6. Dr. Shruti Jain | Member |
| 7. Dr. Neeru Sharma | Member |
| 8. Dr. Meenakshi Sood | Member |

The board approved the following suggestions:

- The minutes of the last Board of Studies of the Department of Electronics and Communication Engineering which was held on 29.09.2016 at 11:05 AM in the Board Room was approved.
- The new electives were approved for B-Tech and M-Tech

B-Tech Electives :

S.No	Subject
1	Applied Medical signal Processing
2	Robotic Systems and Control
3	Time Frequency analysis and its applications

M-Tech Electives :

S.No	Subject
1	VLSI in Biomedical Processing System
2	Computational Intelligence and Applications

PhD students can also opt for M-Tech electives also.

3. Syllabus of all the electives was approved. Find Annexure I.
4. The experiments of Analogue Electronics laboratory was approved as there is change in the syllabi of Session 2016-2020.

Subject: Analogue Electronics Lab

Branch: ECE

Subject code: 10B17EC372

Semester: 3rd

List of Experiments

1. To compare the performance of fixed bias circuit and emitter stabilized bias circuit and Voltage divider bias circuit.
2. To plot the drain and transfer characteristics of a JFET in common source configuration.
3. To design single stage CE amplifier using BJT and calculate the h -parameter model.
4. To investigate the effect of R_2 and R_E on the stability of operating point for voltage divider bias circuit.
5. To design a RC coupled amplifier and observe frequency response.
6. To plot the frequency response of RC Coupled amplifier for different values of R_E .
7. To plot the frequency response of RC Coupled amplifier for different values of C_E .
8. Design two stage RC coupled amplifier
9. To study the performance of Darlington Pair Circuit
10. To observe the effect of negative feedback on the performance of the amplifier.

The meeting concluded with a vote of thanks by **Prof. Sunil Vidya Bhooshan**, Chairman, BOS, ECED.

Department of Electronics and Communication Engineering

JUIT Waknaghat

A meeting of the Board of Studies of the Department of Electronics and Communication Engineering was held on 29.09.2016 at 11:05 AM in the Board Room.

The following members were present

- | | | |
|-------------------------------|-----------------|---------------------|
| 1. Prof. Sunil Vidya Bhooshan | Chairman | |
| 2. Prof. D.T. Shahani | External Member | (comments received) |
| 3. Prof. R.C. Jain | External Member | (comments received) |
| 4. Dr. Ghanshyam Singh | Member | |
| 5. Dr. Rajiv Kumar | Member | |
| 6. Dr. Shruti Jain | Member | |
| 7. Dr. Neeru Sharma | Member | |
| 8. Dr. Meenakshi Sood | Member | |

The board approved the following suggestions:

- The minutes of the last Board of Studies of the Department of Electronics and Communication Engineering which was held on 27.02.2016 at 10:30 AM in the Board Room was approved.
- The minor changes in the course curriculum for B-Tech 2016-2020 batch was approved (change in 4th and 5th semester).

Fourth semester (B4)

Sr.No.	New Scheme	Contact Hours	Credits	Existing
1	Financial Management	3	3	
2	Probability Theory and Random Processes	4	4	
3	Electromagnetic Engineering	4	4	Semiconductor Devices
4	Digital Electronics	4	4	
5	Analogue/ Digital Communications	4	4	Analogue Communication

6	Devices and Circuit simulation Lab	2	1	
7	Digital Electronics Lab	2	1	
8	Analogue/Digital Communications Lab	2	1	Analogue Communications Lab
9	UNIX Programming Lab	2	1	
10	Environmental Studies	3	3	
		30	26	

Fifth semester (B5)

Sr.No.	New Scheme	Contact Hours	Credits	Existing
1	Social and Legal Issues	3	3	
2	Linear Integrated Circuits	4	4	Digital Communications
3	Digital Signal Processing	4	4	
4	Microprocessors and Controllers	4	4	
5	Microwave & Antenna Design	4	4	Electromagnetic Engineering
6	Theory of Control Systems	4	4	
7	Digital Signal Processing Lab	2	1	
8	Linear Integrated Circuits Lab	2	1	Digital Communications Lab
9	Microprocessors and Controllers Lab	2	1	
10	Microwave & Antenna Design Lab	2	1	Electromagnetic Lab
11	Theory of Control Systems lab	2	1	
		33	28	

3. New electives introduced during the academic session 2015-16 and Odd Semester 2016-17 were approved, there was a suggestion to change the name of RF and Microwave to RF and Microwave Engineering and Antenna and Wave Propagation to Antennas and Wave Propagation.

4. The syllabus of Electrical Machines and Instruments and Telecommunication Networks was revised and the latest syllabus is as follows :

Telecommunication Networks (10B11EC611)

Unit	Topics	References	Lectures
1.	DATA COMMUNICATION:- Introduction: Networks – Protocols and standards – Standards organizations – Line configurations – Topology – Transmission mode – Categories of networks – Inter networks. OSI model: Functions of the layers. Encoding and modulating: Transmission media: Guided media – Unguided media – Transmission impairment – Performance.	T1: Ch1, 2, 6 T2: Ch1, 2,6,7	6
2.	ERROR CONTROL:- Error detection and correction: Types of errors – Detection – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cyclic Redundancy Check (CRC) – Check sum – Error correction.	T1: Ch 5 T2: Ch10	8
3.	DATA LINK PROTOCOLS: Data link control: Line discipline – Flow control – Error control. Data link protocols: Asynchronous protocols – Synchronous protocols – Character oriented protocols – BIT oriented protocols – Link access procedures, HDLC, PPP.	T1: Ch 9 T2: Ch11	6
4.	DATA LINK LAYER: ARQ protocols – Stop and Wait ARQ, Go back N ARQ, Selective Repeat ARQ, Transmission efficiency of ARQ protocols HDLC Data Link control. Random access – <u>ALOHA</u> , slotted <u>ALOHA</u> , CSMA, CSMA-CD and CSMA –CA.	T1: Ch 8 T2: Ch11,12	6
5.	NETWORKS AND SWITCHING: - LLC and MAC layers, LAN: Project 802 – Ethernet – Token bus – Token ring – FDDI. MAN: IEEE 802.6 (DQDB) – SMDS. Switching: Circuit switching – Packet switching – Message switching	T1: Ch 10,11 T2: Ch13	10
6.	a) NETWORKING DEVICES:- Networking and internetworking devices: Repeaters – Bridges – Gateways – Other devices – b) Network layer: <i>Need, Addressing, Routing Protocols, Subnetting, Supernetting.</i>	T1: Ch 14,15 T2: Ch15	10
Total number of lectures			46

Text Books

1. Data Communication And Computer networks PHI : Prakash C Gupta
2. Data communications and Networking Pearson Education: Behrouz A. Forouzan

Reference Books

1. Data and Computer Communications, 9th edition, Pearson: William Stallings
2. Computer Networks, Pearson Education, 4th edition: A. Tanenbaum

Electrical Machines and Instruments (10B11EC311)

Unit	Topics	References (chapter number, page no. etc)	Lectures
1.	<p style="text-align: center;">Magnetic Circuits</p> <p>Magnetomotive Force (MMF); Magnetic Field Strength; Permeability, Reluctance, Permeance; Analogy between Electric and Magnetic Circuits.</p>		2
2.	<p style="text-align: center;">Transformers</p> <ul style="list-style-type: none"> • Principle of Operation, EMF Equation; Ideal Transformer, Conditions for Ideal Transformer, Transformation Ratio, Volt-Amperes, Impedance Transformation. • Practical Transformer at No Load, Effect of Magnetization, Effect of Core Losses: (i) Hysteresis Loss, (ii) Eddy-Current Loss; Construction of Transformer, Core of Transformer: (i) Core Type Transformer; (ii) Shell Type Transformer. • Ideal Transformer on Load; Practical Transformer on Load : Effect of Winding Resistance, Effect of Flux Leakage; Equivalent Circuit of a Transformer, Phasor Diagram, Simplified Equivalent Circuit, Approximate Equivalent Circuit • Voltage Regulation of a Transformer, Approximate Voltage Drop, Exact Voltage Drop; Condition for Zero Regulation, Condition for Maximum Regulation. • Efficiency of a Transformer; Condition for Maximum Efficiency; All-day Efficiency. 		12
3	<p style="text-align: center;">Electro-mechanical Energy Conversion</p> <ul style="list-style-type: none"> • DC machines- construction, working principle and characteristics and applications • Synchronous machines- construction, working principle and characteristics and applications • Induction machines and their characteristics, speed control, applications • Introduction to fractional horse power motors • Stepper motors and their applications 		12
4	<p style="text-align: center;">Sensors and Transducers</p> <ul style="list-style-type: none"> • Introduction to sensors and transducers and their classification • Strain gauge, LVDT, piezoelectric, inductive and capacitive transducers, Hall Effect transducer, light and temperature sensors, proximity sensors • Introduction to smart sensors and their applications 		8
5	<p style="text-align: center;">Electrical Instruments</p> <ul style="list-style-type: none"> • Essentials of an Instrument : (1) Deflecting Torque; (2) Controlling Torque : (i) <i>Spring Control</i>, (ii) <i>Gravity</i> 		

	<p><i>Control</i>); (3) Damping Torque, Methods of Obtaining Damping Torques (1) <i>Air Friction Damping</i>, (2) <i>Fluid Friction Damping</i>, (3) <i>Eddy-Current Damping</i>.</p> <ul style="list-style-type: none"> • Permanent Magnet Moving Coil (PMMC) Instruments; Ammeters; (<i>Multi-Range Ammeter</i>); Universal Shunt for Extending Current Ranges; Voltmeters; (<i>Multi-Range Voltmeter, AC Voltage Measurement</i>). • The Series-Type Ohmmeter; Meter Sensitivity (Ohms-Per-Volt rating); Loading Effect; Multimeter; Dynamometer Wattmeter; Single-Phase Induction Type Energy Meter. 		8
6	<p style="text-align: center;">Electronic Instruments</p> <ul style="list-style-type: none"> • Cathode Ray Oscilloscope: Construction, Working and Applications. • Digital meters; Function Generators. 		2
Total Number of Lectures			44

The meeting concluded with a vote of thanks by **Prof. Sunil Vidya Bhooshan**, Chairman, BOS, ECED.

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

Minutes of the meeting of Board of Studies - April 15, 2017

A meeting of the BoS members was held on April 15, 2017 at 10:00 a.m. in the Visitor Room. The following were present:

1. Dr. Anupriya Kaur, HoD HSS	Chairperson
2. Mr. Balkar Singh, AGM, PEDDA Chandigarh	Member
3. Prof. S. P. Singh, IIT Roorkee	Member
4. Dr. Amit Srivastava, JUIT Waknaghat	Member
5. Dr. Tanu Sharma, JUIT Waknaghat	Member
6. Prof. Ghanshyam Singh, JUIT Waknaghat	Member

The meeting commenced with a welcome address by the chairperson. A brief introduction to the department profile, vision and mission was made. Subsequently, the agenda items were addressed. Based on the deliberations, following are the general and subject specific comments.

1. All the three external members unanimously agreed that the courses offered by the HSS department are well designed. All the courses have defined outcomes on the placement and overall professional development.
2. Mr. Balkar Singh shared his view about the importance of the knowledge of energy management among the students of engineering. He emphasized on the present day need of shifting from fossil fuels to solar energy. He proposed introducing of inter-disciplinary courses in engineering institutions.
3. Prof. S. P. Singh shared his views about how HSS department can play a significant role in a holistic development among engineering students. He also emphasized that the futuristic importance of alternate source of energy and importance of green energy.
4. Prof. Ghanshyam Singh shared his views about the importance of Department of HSS in developing the behavioral aspects in the students of engineering. He asserted that the role of HSS is to integrate the students of engineering with the society because ultimately they will live and work for the society. He also agreed to with the opinion of Mr. Balkar Singh that the students should be more aware about the conservation of energy.

5. In view of the above, Mr. Balkar Singh, Prof. Ghanshyam Singh and Prof. S.P. Singh suggested inclusion of courses like Energy Management, Energy Economics and Environmental Economics, possibly following an interdisciplinary approach.
6. Prof. Singh suggested exploring the possibility of offering Minor Specialization in the field of Finance, Marketing, Human Resource etc.
7. Some specific concerns were raised on the design of some courses such as:
 - a. Presentation and Communication Skills should include in its pedagogy technical writing in an inter-disciplinary approach.
 - b. Social and legal issues has a misalignment in its topics and content.
 - c. Business analytics may adopt a modular/thematic approach based on functional areas of management.
8. It was suggested that faculty may from time to time attend workshops on contemporary issues and aspects for developing new courses.

The meeting concluded with a vote of thanks from the Chairperson.

Agenda details:

1. Mr Balkar Singh is requested to (briefly) share his opinion on present day skill requirements expected from the engineering graduates.
2. Prof. S.P. Singh is requested to share his opinion on the role of HSS in the curriculum of B.Tech program.
3. Review the content/evaluation/pedagogy of core and elective courses of HSS department.

Handouts/Documentation

Course outlines of all core and elective courses of HSS (supported with introductory note, exam papers, sample tutorial exercises)

Dr Amit Srivastava – Associate Professor

Dr Anupriya Kaur – Associate Professor & Head

Department of Physics and Materials Science

Dated: 23-11-2017

The meeting of the Board of Studies of the Department of Physics and Materials Science was held at 11:00 AM on 23rd November 2017 at JUIT Board Room. The following members of the BOS, Physics and Materials Science were present in the meeting

Members from Department

Prof. P.B. Barman	HOD	Chairman
Prof. Sunil K. Khah		
Dr. Vineet Sharma		
Dr. Pankaj Sharma		
Dr. Dheeraj Sharma		
Dr. Rajesh Kumar		
Dr. Surajit Kumar Hazra		
Dr. Ragini R. Singh		
Dr. Sanjiv Kumar Tiwari		

[Handwritten signatures and dates for the Department members:]
23/11/17
- On leave -
23/11/17
23/11/2017
23/11/2017
23/11/17
23/11/2017
23/11/17
23/11/17

Members from other Departments of JUIT

Prof. Karanjeet Singh	HOD, Mathematics	
Prof. Sunil Bhooshan	HOD, ECE	
Prof. S.P. Ghreera	HOD, CSE & IT	
Prof. Ashok K.Gupta	HOD, Civil	- on leave -
Dr. Sudhir Syal	Acting Head, BI & BT	23/11/17

Member from Sister Institutes

Prof. D.K. Rai HOD, Physics & Materials Science, JIIT, Sec.62, Noida

Member from Other Institutes

Prof. Anil Vohra Dean, Academic Affairs,
Kurukshetra University, Kurukshetra, Haryana

(Professor, Dept. of Electronic Science,
Kurukshetra University, Kurukshetra, Haryana)

Department of Physics and Materials Science

Board of Studies Meeting of the Department of Physics and Materials Science on 23rd November 2017 at 11:00 AM to decide the agenda for the Academic Council Meeting to be held in December 2017

Agenda I: Proposal to discuss introduction of M.Sc. Physics Course (Duration: 2-Years Programme Credits: 75), w.e.f. July 2018. [Annexure-I, Brief proposal and course outline].

Agenda II: Proposal to appoint Prof. (Dr.) Sukumar Basu as Emeritus/Honorary Professor in the Department of Physics & Materials Science, JUIT, Wajnaghat, H.P. [Annexure-II, Joint publications of Prof. Sukumar Basu with Prof. P.B. Barman & Dr. Surajit K. Hazra, Department of Physics & Materials Science, JUIT].

M.Sc. Physics

Duration: 04 Semesters

Programme Credits:75

Semester I (Credits: 17)

S. No.	Course Code	Course Name	L-T-P	Credit
I	18MS1PH111	Mathematical Physics	3-0-0	3
II	18MS1PH112	Classical Physics	3-0-0	3
III	184MS1PH113	Quantum Mechanics	3-0-0	3
IV	18MS1PH114	Electrodynamics	3-0-0	3
V	18MS1PH115	Nuclear Physics & Particle Physics	3-0-0	3
VI	18MS1PH116	Laboratory-I	0-0-4	2

Semester II (Credits: 20)

S. No.	Course Code	Course Name	L-T-P	Credit
VII	18MS2PH211	Computational Physics	3-0-0	3
VIII	18MS2PH212	Statistical Physics	3-0-0	3
IX	18MS2PH213	Condensed Matter Physics-I	3-0-0	3
X	18MS2PH214	Atomic & Molecular Spectroscopy	3-0-0	3
XI	18MS2PH215	Electronics-I	3-0-0	3
XII	18MS2PH216	Laboratory-II	0-0-4	2
XIII	18MS2PH217	Programming in MATLAB	3-0-0	3

Semester III (Credits: 19)

S. No.	Course Code	Course Name	L-T-P	Credit
XIV	18MS3PH311	Electronics-II	3-0-0	3
XV	18MS3PH312	Advanced Quantum Mechanics	3-0-0	3
XVI	18MS3PH313	Condensed Matter Physics-II	3-0-0	3
XVII	18MS3PH314	Computational Physics Laboratory	0-0-4	2
XVIII	18MS3PH315	Project Part-I	0-0-10	5
XIX	18MS3PH3xx	Elective-I	3-0-0	3

Semester IV (Credits: 19)

S. No.	Course Code	Course Name	L-T-P	Credit
XX	18MS4PH11	Project Part-II	0-0-20	10
XXI	18MS4P4xx	Elective-II	3-0-0	3
XXII	18MS4PH4xx	Elective-III	3-0-0	3
XXIII	18MS4PH4xx	Elective-IV	3-0-0	3

Evaluation Scheme:

Theory		Laboratory	
Test - I	15	Day to day work 60%: Break-up of Day to day work will be as follows: (i) Attendance 15% (ii) Quantity & Quality of Experiments including Performed, Learning laboratory Skills and handling Laboratory Equipment, Instruments, Gadgets, Components, Materials and Software etc. 30% (iii) Laboratory record 15%.	60
Test - II	25		
Test - III	35	Mid Term Test 20% (Viva + performance)	20
Teacher Assessment	25	End Term Test 20% (Viva + Performance)	20
Total Marks	100	Total marks	100

worked mainly on oxide semiconductors like ZnO and TiO₂ for gas sensor applications. At present he is working on growth and characterizations of the novel material, graphene for gas sensor applications. He has published around 250 scientific and technical papers in the reputed national and international journals. So far he has contributed 12 book chapters mostly published by the international publishers. Prof. Basu has edited a book "crystalline silicon-properties & uses" published by InTech publishers, a European publishing house. He has guided several Ph.D. theses in IIT Kharagpur and in Jadavpore University.

Prof. Basu attended a large number of national and international seminars and conferences throughout the world and delivered invited and contributed lectures on his area of research specializations. He is the editorial board member of a number of national and international journals on materials science and sensors. He is the regular reviewer of the journals, J. of Materials Science-Materials in Electronics, J. of Materials Science & Engineering B, Solid State Electronics, J. of Electronic Materials, IEEE Sensors, and Sensors & Actuators B: Chemical, Sensor Letters, Applied Surface Science, Journal of Electrochemical Society and ACS Journals on Chemical Sensors. Prof. Basu has quite a few novel and new ideas in the field of chemical gas sensors to contain the environmental pollutions, an alarming problem for human lives.

Joint Publications:

1. Sukumar Basu, Surajit Kumar Hazra, Graphene-Noble Metal Nano-Composites and Applications for Hydrogen Sensors, C 2017, 3(4), 29; doi:10.3390/c3040029.
2. D. Dutta, J. Das, S.K. Hazra, C.K. Sarkar, S. Basu, Influence of graphene growth temperature by chemical vapour deposition on the hydrogen response of palladium-graphene junction, J Mater Sci: Mater Electron, 28 (2017) 13217-13228, DOI 10.1007/s10854-017-715.
3. D. Dutta, J. Das, S.K. Hazra, S. Basu, Influence of Metal Contacts on Graphene Based Chemical Sensor Devices. Journal of Microelectronics and Solid State Devices. 3(3) (2016) 1-9p. (ISSN: 2455-3336)
4. D. Dutta, E. Bontempi, Y. You, S. Sinha, J. Das, S.K. Hazra, C.K. Sarkar, S. Basu, Surface topography and hydrogen sensor response of APCVD grown multilayer graphene thin films, J Mater Sci: Mater Electron, 28(1) (2016), 157-166; DOI 10.1007/s10854-016-5506-1.
5. Temperature- and Hydrogen-Gas-Dependent Reversible Inversion of n-/p-Type Conductivity in CVD-Grown Multilayer Graphene (MLG) Film, Journal of Electronic Materials, D. Dutta, S.K. Hazra, J. Das, C.K. Sarkar, S. Basu, 45(6) (2016) 2861-2869.
6. Graphene-Oxide Nano Composites for Chemical Sensor Applications, C Journal of Carbon Research, S.K. Hazra, S. Basu 2 (2016) 12; doi:10.3390/c2020012
7. Performance of a CVD grown graphene-based planar device for a hydrogen gas sensor, Measurement Science & Technology, D. Dutta, A. Hazra, S.K. Hazra, J. Das, S. Bhattacharyya, C.K. Sarkar, S. Basu 26(11) (2015) 115104.
8. Temperature dependent dual hydrogen sensor response of Pd nanoparticle decorated Al doped ZnO surfaces, J. Appl. Phys., D. Gupta, D. Dutta, M. Kumar, P.B. Barman, T. Som, S.K. Hazra, 118 (2015) 164501
9. Role of metallic-like conductivity in unusual temperature-dependent transport in n-ZnO:Al/p-Si heterojunction diode, M. Kumar, S.K. Hazra, T. Som, J. Phys. D., 48(45) (2015) 455301
10. Studies on p-TiO₂/n-graphene heterojunction for hydrogen detection, D. Dutta, S.K. Hazra, J. Das, C.K. Sarkar, S. Basu, 212 (2015) 84-92, Sensors and Actuators, B: Chemical
11. A low temperature hydrogen sensor based on palladium nanoparticles, D. Gupta, D. Dutta, M. Kumar, P.B. Barman, C.K. Sarkar, S. Basu, S.K. Hazra, 196 (2014) 215-222, Sensors and Actuators, B: Chemical.
12. Growth of Multilayer Graphene by Chemical Vapor Deposition (CVD) and Characterizations, D. Dutta, A. Hazra, J. Das, S. K. Hazra, V. N. Lakshmi, S. K. Sinha, A. Gianonchelli, C. K. Sarkar, S. Basu, Journal of Nano science and Molecular Nanotechnology, (2013), doi:10.4172/2324-8777.S1-004.
13. Anodically grown nanocrystalline titania thin film for hydrogen gas sensors - A comparative study of planar and MAIM device configurations, A. Hazra, S.K. Hazra, E. Bontempi, V.N. Lakshmi, S. Sinha, C.K. Sarkar, S. Basu, 188 (2013) 787-798, Sensors and Actuators, B: Chemical.
14. Studies on Hydrogen Sensing by Anodized Nanoporous Titania Thin Film Using Soft Drink Electrolyte, A. Hazra, S.K. Hazra, D. Dutta, C.K. Sarkar, S. Basu, Frontiers in Sensors 1(2) (2013) 17-26

Minutes of the Board of Studies Meeting of the Department of Physics and Materials Science on 23rd November 2017 at 11:00 AM in JUIT Board Room

Agenda I: Proposal to discuss introduction of M.Sc. Physics Course (Duration: 2-Years Programme Credits: 75), w.e.f. July 2018. [Annexure-I, Brief proposal and course outline].

Agenda II: Proposal to appoint Prof. (Dr.) Sukumar Basu as Emeritus/Honorary Professor in the Department of Physics & Materials Science, JUIT, Wagnaghat, H.P. [Annexure-II, Joint publications of Prof. Sukumar Basu with Prof. P.B. Barman & Dr. Surajit K. Hazra, Department of Physics & Materials Science, JUIT].

The suggestions made in the meeting are as given under:

The members of BOS present in the meeting approved both the agendas for the Academic Council Meeting.

Members from Department

✓ Prof. P.B. Barman	HOD	Chairman
Prof. Sunil K. Khah		
Dr. Vineet Sharma		
Dr. Pankaj Sharma		
Dr. Dheeraj Sharma		
Dr. Rajesh Kumar		
Dr. Surajit Kumar Hazra		
Dr. Ragini R. Singh		
Dr. Sanjiv Kumar Tiwari		

Handwritten notes:
23/11/17
on leave
23/11/2017
23/11/2017
23/11/2017
23/11/17
23/11/17
Bengal
23/11/17
Adhwa

Members from other Departments of JUIT

Prof. Karanjeet Singh	HOD, Mathematics	<i>Karan</i>
Prof. Sunil Bhooshan	HOD, ECE	<i>Sunil</i>
Prof. S.P. Ghreera	HOD, CSE & IT	<i>S.P. Ghreera</i>
Prof. Ashok K. Gupta	HOD, Civil	<i>Ashok K. Gupta</i>
Dr. Sudhir Syal	Acting Head, BI & BT	<i>Sudhir Syal</i>

on leave
23/11/17

The following members were not present in the meeting:

Member from Sister Institutes

Prof. D.K. Rai HOD, Physics & Materials Science, JIIT, Sec.62, Noida

Member from Other Institutes

Prof. Anil Vohra Dean, Academic Affairs,
Kurukshetra University, Kurukshetra, Haryana
(Professor, Dept. of Electronic Science,
Kurukshetra University, Kurukshetra, Haryana)

Board of Studies meeting (Physics and Materials Science) – 28-01-2017

Members from Department

Prof. P.B. Barman HOD
Prof. Sunil K. Khah
Dr. Vineet Sharma
Dr. Pankaj Sharma
Dr. Dheeraj Sharma
Dr. Rajesh Kumar (On sabbatical)
Dr. Surajit Kumar Hazra
Dr. Ragini R. Singh
Dr. Sanjiv Kumar Tiwari *Sanjiv*

Chairman *P*
Ashok
Singh 28/1/17
DI
Singh

Members from other Departments of JIIT

Prof. R.S. Chauhan, Dean, BI & BT
Prof. Karanjeet Singh HOD, Mathematics *Karan*
Prof. Sunil Bhooshan HOD, ECE *Sunil*
Prof. S.P. Ghreera HOD, CSE & IT *S.P.*
Prof. Ashok K. Gupta HOD, Civil *Ashok*

Member from Sister Institutes

Prof. D.K. Rai HOD, Physics & Materials Science, JIIT, Sec.62, Noida

Member from Other Institutes

Prof. Anil Vohra Dean, Academic Affairs,
Kurukshetra University, Kurukshetra, Haryana

(Professor, Dept. of Electronic Science,
Kurukshetra University, Kurukshetra, Haryana)

Board of Studies Meeting of the Department of Physics and Materials Science on 28th January 2017.

Agenda I: Proposal to include new experiment in

Physics-I Lab (10B17PH171):

B.Tech 1st semester (CSE,ECE,IT,CE)

Physics-II Lab (10B17PH271):

B.Tech 2nd semester (CSE,ECS,IT)

Basic Engineering and Applied Physics Lab (16B17PH172): B.Tech 1st semester (BT,BI)

Agenda II: Proposal to allocate new lab for Physics lab- I and Physics lab- II

The proposal made for Agenda I:

- (a) There is no need to introduce new experiment in physics lab-I, however dispersion curve may be plotted for experiment (Dispersion power of material of prism) and Cauchy relation may be verified.
- (b) Experiment related to solar energy and solar panel, and advance setup for calculation of losses in optical-fiber should be introduce in physics lab-II.
- (c) New experimental setup for BT-BI should be included in Basic Engineering and Applied Lab. Members recommended that Absorption, fluorescence and viscosity related experiments will be highly beneficial for BT-BI students.

The proposal made for Agenda II:

It was proposed to allocate/ made new lab for Physics lab-I and Physics lab-II .