

INDIAN INSTITUTE OF TECHNOLOGY MANDI
KAMAND, DISTT. MANDI – 175005 (HIMACHAL PRADESH)



MINUTES OF 27TH BOARD OF ACADEMICS MEETING

VENUE : A-4 CONFERENCE ROOM, KAMAND
DATE : 26TH NOVEMBER, 2018 (MONDAY)
TIME : 03:00 P.M.

Following members attended the meeting

Sl.No	Responsibilities	Name
1	Dean Academics	Dr. Pradeep Parameswaran
2	Associate Dean (Research)	Dr. Rahul Vaish
3	Associate Dean (Courses)	Dr. Anil K Sao
4	Chairman Library Advisory Committee	Dr. Astrid Kiehn
5	Chairman Course Proposal Committee + Nominee (SCEE)	Dr. Kunal Ghosh
6	Course Coordinator (IC Courses)	Dr. Aniruddha Chakraborty
7	Course Coordinator (MA Dev.Studies) + Nominee (SHSS)	Dr. Shyamasree Dasgupta
8	Course Coordinator (B.Tech.-CSE)	Dr. Dileep A D
9	Course Coordinator (B.Tech.-EE)	Dr. Shubhajit Roy Chowdhury
10	Course Coordinator (B.Tech.-ME)	Dr. Arpan Gupta
11	Course Coordinator (B.Tech.-CE)	Dr. Deepak Swami
12	Course Coordinator (M.Tech.-(Communication and Signal Processing))	Dr. Renu M Rameshan
13	Course Coordinator (M.Tech.-Biotechnology)	Dr. Shyam K Masakapalli
14	Course Coordinator (M.Sc.-Applied Maths)	Dr. Nitu Kumari
15	Course Coordinator (M.Sc.-Physics) + (I-Ph.D. (Physics))	Dr. Ajay Soni
16	Nominee-1: School of Engineering	Dr. Rajesh Ghosh
17	Nominee-2: School of Engineering	Dr. Venkata Uday Kala
18	Nominee-2: School of Computing & Electrical Engineering	Dr. Aditya Nigam
19	Nominee-1: School of Basic Sciences	Dr. Syed Abbas
20	Nominee-2: School of Basic Sciences	Dr. Prosenjit Mondal
21	Nominee-1: School of Humanities & Social Sciences	Dr. Suman Sigroha
22	Academic Affairs Secretary	Mr. Abhishek
23	Assistant Registrar (Academics): Secretary	Mr. Suresh Rohilla

Following members could not attend the meeting

Sl.No.		Name	
1	Course Coordinator M.Sc. (Chemistry)	Dr. Chayan K Nandi	Member
2	Course Coordinator (M.Tech.- (Energy Engg. (Materials))	Dr. Atul Dhar	Member
3	Course Coordinator (M.Tech.-(Mechanical Engg. (Energy Systems))		
4	Course Coordinator (M.Tech.-(VLSI))	Dr. Satinder Sharma	Member
5	Course Coordinator (M.Tech.-(Power Electronics and Drives))	Dr. Narsa Reddy Tummuru	Member
6	Research Affairs Secretary	Mr. Ashish Tiwari	Member
7	Industry Member – 1	Dr. Nadeem Akhtar	Member

Special Invitee

Sl.No.	Name	
1.	Dr. Rajneesh Sharma	Asst. Prof., SE
2.	Dr. C. S. Yadav	Asst. Prof. , SBS
3.	Dr. Varun Dutt	Asst. Prof., SCEE
4.	Dr. Kaustav Sarkar	Asst. Prof., SE
5.	Dr. Kalpesh Haria	Asst. Prof. , SBS

PART-A

(Issues discussed by the Board of Academics when the Student Members were present)

27.1 Confirmation of the minutes of 26th meeting of Board of Academics:

The Part-A minutes of the 26th Board of Academics meeting held on 16th October, 2018 were confirmed.

27.2 To consider approval of courses presented by the Course Proposal Committee (CPC):

The Chairperson, CPC presented 22 New Courses for consideration and approval of BoA. After due deliberations, the BoA recommended following thirteen courses for approval by the Senate. The final course descriptions after incorporating the suggested changes are placed at **Annexure – A**.

Sl.No.	Course No.	Course Name	Credits
1	CE610	Analysis and Design for Earthquake Resistant Structures	3-0-0-3
2	CE607	Finite Element Analysis in Structural Engineering	3-0-2-4
3	CE586P	Mini Project (Continued from Winter Term -1)	0-0-6-3
4	CE688P	Post Graduate Project (PGP) -I	0-0-24-12
5	HS531	Gender and Development	3-0-0-3
6	HS553P	Field Study	0-0-8-4
7	HS551P	Development Studies Practicum I	0-0-8-4
8	HS 552P	Development Studies Practicum 2	0-0-8-4
9	HS523	Decision Making for Social Change	3-0-0-3
10	HS550	Statistical Methods	3-0-2-4
11	PH518P	Post Graduate Project-I	0-0-6-3
12	PH519P	Post Graduate Project-II	0-0-16-8
13	PH605	Superconductivity	3-0-0-3



14	EE626P	Post Graduate Project (CSP) Part I	0-0-20-10
15	EE630P	Independent Study	0-0-6-3

Due to time constraint, the following eight courses were deferred by the BoA to be deliberated in its' next meeting:-

Sl.No.	Course No.	Course Name	Credits
1	CE611	Structural Health Monitoring	3-0-0-3
2	CE689P	Post Graduate Project (PGP) -II	0-0-34-17
3	EE401P	Independent study	3-0-0-3
4	EE627P	Post Graduate Project (CSP) Part II	0-0-36-18
5	MA 603	Advanced Partial Differential Equation	3-0-0-3
6	MA 521	Functional Analysis	3-1-0-4
7	MA 511	Real Analysis	3-1-0-4
8	MA 705	Modelling Population Dynamics	3-0-0-3

27.3 To consider Course credit re-distribution for I-Ph.D. (Physics).

Course Co-ordinator I-Ph.D (Physics) Dr. Ajay Soni briefed BoA on the course credit re-distribution for I-Ph.D. Program in Physics. The board deliberated and suggested some minor changes. Dr. Ajay Soni was requested to modify the proposal accordingly. The modified and final proposal placed at **Annexure-B** is recommended for consideration by the Senate for it's approval.

27.4 To consider the proposal of modification in M.Tech. CSP Curriculum.

Dr. Renu Rameshan briefed the Board on the proposal of modification in M.Tech CSP Curriculum. Earlier the post graduate project was split over summer (1 credit), third semester (9 credits) and fourth semester (18 credits). This is modified by removing the summer component; now it is third semester (10 credits) and fourth semester (18 credits). The modified document is attached. Modified proposal for M.Tech. CSP Curriculum is placed at **Annexure – C**.

27.5 To consider proposal for joining JAM for admitting students in M.Sc. (Applied Mathematics) at IIT Mandi.

Dr. Nitu Kumari, Course Coordinator-M.Sc. (Applied Mathematics), submitted a proposal to select the M.Sc. (Mathematics) students through JAM. The Board deliberated and recommended the following proposal to the Senate for approval.

- (i) IIT Mandi will join JAM for admitting students for “**M.Sc. in Applied Mathematics**”. All the admissions in the abovementioned discipline will be through JAM from 2019 onwards. Request for the same will be submitted to JAM.
- (ii) The eligibility criteria will be as follow:
“**The students should have Bachelor’s Degree with Mathematics for at least 2 years/four semesters. Mathematics should be one of the subjects at 10+2 level**”
- (iii) Maximum number of seats should be increased to 40 from 2019 onwards.
- (iv) The actual number admitted in each year and the reservation roster will be decided administratively.

27.6 To consider shifting of Academic Activities to North Campus.

Associate Dean (Courses) proposed a detailed draft plan and briefed the Board a phase wise shifting plan of overall activities to North Campus which are presently being run at South Campus. He briefed that by July 2019, all B.Tech. students and some PG batches shall be moved to North Campus completely along with maximum feasible Labs and other requirements. Offices of Dean (Students), Dean (Academics) and Common Offices are planned to start functioning by July 2019 at North Campus. The proposed intake of various programs in next academic year was presented and deliberated. BoA agreed with the shifting plans and proposed intake (Given as **Annexure – D**)

27.7 Any other item with the permission of the Chair.

In addition to the circulated agenda points, with the permission of Chairman BoA, Associate Dean (Courses) apprised the Board that a few administrative issues are being faced while processing cases of JRF to SRF conversion and comprehensive exams conducted in some Schools like SCEE. Chairman BoA constituted the following Sub-committee to re-look the existing guidelines of JRF to SRF conversion and Comprehensive exams and propose new guidelines if required.

1. Dr. Rahul Vaish (Chairman)
2. Dr. Kunal Ghosh (Member)
3. Dr. Shyamashree Dasgupta (Member)
4. Dr. Prosenjit Mondal (Member)

The meeting ended with a vote of thanks to the Chair.


Secretary, Board of Academics


Chairman, Board of Academics

Indian Institute of Technology Mandi

Proposal for a New Course

Course Number : CE610
Course Name : Analysis and Design for Earthquake Resistant Structures
Credits : 3-0-0-3
Prerequisites : Structural Dynamics with Application to Earthquake Engineering (CE511) or Equivalent
Intended for : M.Tech. (Structural Engineering); UG (4th year), PG (M.S., Ph.D.)
Distribution : Elective (UG/PG)/ Specialization Elective (M.Tech. - Structural Engineering)
Semester : Odd/Even

1. Preamble: Earthquake resistant design is becoming more common practice in the industry as a significant portion of our country comes under high seismic zone. It is expected from a structural engineer to know the concept of earthquake resistant design and be conversant with various design guidelines. This course will cover various analysis methods for calculation of earthquake induced forces in building. Thereafter it will provide in-depth insight into design of buildings to withstand earthquake forces and related seismic safety issues. Evaluation of this course will include a design project to give the students hands-on experience of seismic analysis and design, and preparation of design report.

2. Course Modules with Quantitative Lecture Hours:

Module 1: **(4 hours)**

Basic Concepts: Behavior of structures and structural components under earthquake loading; Introduction to seismology; Seismic inputs to structures; Examples of earthquake resistant structures and their behavior during actual earthquakes.

Module 2: **(4 hours)**

Seismic Design Philosophy: Historical development of earthquake resistant design philosophy; Concept of strength, overstrength and ductility; Concept of equal displacement and equal energy principles, capacity design.

Module 3: **(12 hours)**

Modeling and Analysis of Buildings: Equivalent static analysis; Response spectrum analysis; Mode superposition method; Time history analysis; Non-linear analysis consideration; Pushover analysis; Modeling concept of reinforced concrete building; Consideration of irregularities in seismic design of buildings; Introduction to modeling and analysis of reinforced masonry buildings; Simulation of structures using software for seismic analysis.

Module 4: **(14 hours)**

Seismic Design of Building Components: Earthquake resistant properties of reinforced concrete; Seismic behavior and design of linear reinforced concrete elements; Seismic behavior of planar reinforced concrete elements; Codal provisions; Detailing for ductility; Design guidelines specific for reinforced masonry building; Earthquake resistant design considerations for steel structures. Consideration for computer aided seismic design using

software simulation.

Module 5:

(8 hours)

Advanced Topics in Earthquake Resistant Design: Performance based earthquake engineering; Introduction to earthquake resistant design for special structures; Retrofitting and strengthening of structures; Concept of base isolation technique and other seismic vibration control.

3. Textbooks:

- (i) Datta T.K. (2010), "Seismic Analysis of Structures", 1st Edition, John Wiley & Sons (Asia) Pte Ltd, Singapore.
- (ii) Shrikhande M., Agrawal P. (2006), "Earthquake Resistant Design of Structures" Prentice Hall India Learning Private Limited; 1st Edition, New Delhi, India.

4. References:

- (i) Pauley T. and Priestley M.J.N. (1992), "Seismic Design of Reinforced Concrete and Masonry Buildings", John-Wiley & Sons New Jersey, USA.
- (ii) Chopra A.K. (2017), "Dynamics of Structures - Theory and Application to Earthquake Engineering", 5th Edition, Pearson Education India, New Delhi, India.
- (iii) Taly N. (2010), "Design of Reinforced Masonry Structures", McGraw-Hill Education; 2nd Edition, USA.
- (iv) Rai D.C. (2005), "ITK-GSDMA Guidelines for Structural use of Reinforced Masonry - Provisions with Commentary and Explanatory Examples", IIT Kanpur, Gujrat State Disaster Mitigation Authority.
- (v) ATC-40 (1996), "Seismic Evaluation and Retrofit of Concrete Building – Vol. I & II", Applied Technology Council, California, USA.
- (vi) AISC 341-10 (2010), "Seismic Provisions for Structural Steel Buildings", American Institute of Steel Construction, Illinois, USA.
- (vii) Naeim F., Kelly J.M. (1999), "Design of Seismic Isolated Structures: From Theory to Practice", John Wiley & Sons, USA.
- (viii) IS 1893 (Part 1) (2016), "Criteria for Earthquake Resistant Design of Structures: Part 1 General Provisions and Buildings", Bureau of Indian Standard, New Delhi, India.
- (ix) IS 13920 (2016), "Ductile Design and Detailing of Reinforced Concrete Structures Subjected to Seismic Forces-Code of Practice", Bureau of Indian Standard, New Delhi, India.

5. Similarity content declaration with existing courses:

Sl. No.	Course Code	Similarity Content	Approximate % of Content
1	CE511 (Structural Dynamics with Application to Earthquake Engineering)	Seismic response analysis methods; Concept of base isolation	10%
2	CE605 - Engineering Seismology and Seismic Hazard Assessment	Earthquake inputs	5%

6. Justification for new course proposal if cumulative similarity content is > 30%:

Not Applicable.

Approvals:

Other faculty interested in teaching this course: Dr. Maheshreddy Gade

Proposed by: Dr. Sandip Kumar Saha

School: School of Engineering (SE)

Signature:

Date:

Recommended / Not Recommended, with comments:

Chairman, CPC

Date:

Approved / Not Approved:

Chairman, Senate

Date:



IIT Mandi

Proposal for a New course

Course Number: CE607

Course Name: Finite Element Analysis in Structural Engineering

Credits: 3-0-2-4

Prerequisites: Numerical methods for Engineering Computations (ME 504) , Solid Mechanics in Structural Engineering (CE 557)

Intended for: B.Tech.(4th year)/M.S./M.Tech./Ph.D.

Distribution: Discipline Elective (UG); Specialization Core (M.Tech. in Structural Engineering)/Elective (PG)

Semester: Odd/Even

1. Preamble: A sound knowledge of Finite Element Method (FEM) is imperative to the analysis of complicated civil engineering structures. Its importance in the domain of structural engineering is particularly immense owing to the growing demands of non conventional design and performance requirements. The accurate analysis of structural response to complicated loading conditions caused by wind, snow, hydrodynamic action, earthquake and blasts etc. requires an in-depth comprehension of FEM theory, programming and industry standard software tools.

2. Course Outline: The course starts with the history of the development of finite element method and basic principles used in the formulations. Next, the required basic mathematics will be discussed. Later on, the formulations and programming of 1D, 2D and 3D elements will be deliberated along with their application to structural components.

Course modules:

1. Introduction:

Basic concepts of Structural Analysis: Types and deformations in framed and pin jointed structures, static and kinematic indeterminacy; Review of matrix methods - flexibility and stiffness; Review of energy principles; Load combinations as per IS 456, IS 1893 and IRC provisions

FEM theory: Nodes, Equilibrium and Continuity; Stiffness equations; Boundary conditions - essential, natural, mixed; Steps in FEM; Convergence study
(8 hours)

2. Analysis of plane and space trusses: Formulation of local stiffness matrix for truss element using direct and variational methods; Transformation of the element stiffness equation in 1D, 2D and 3D space; Formulation of load vector in local axis and its transformation in 1D,2D



and 3D space; Assembly of the global stiffness matrix and load vector; Application of boundary conditions and solution of the equations
(8 hours)

3. Analysis of beams, plane and space frames: Formulation of local stiffness matrix for beam element using direct and variational methods; Transformation of the element stiffness equation and load vector in 1D, 2D and 3D space; Assembly of the global stiffness matrix and load vector; Application of boundary conditions and solution of the equations
(8 hours)
4. Analysis of slabs: Types of slabs; Formulation of rectangular thin plate element; Transformation of the element stiffness equation and load vector in 2D and 3D space; Assembly of the global stiffness matrix and load vector; Application of boundary conditions and solution of the equations; Introduction to other flat plate flexural elements
(8 hours)
5. FEA of structures using reduced elasticity: Formulation of CST for plane stress, plain strain and axisymmetric problems; Application to Foundation, Dam and Chimney
(6 hours)
6. Introduction to FEA for dynamic loading conditions: Response analysis of framed structures subjected to earthquake loading
(4 hours)

Laboratory sessions (28 contact hours):

1. Introduction to Structural engineering analysis and design packages (STAAD.Pro/SAP2000)
2. Analysis of plane trusses subjected to static and wind loads
3. Analysis of space trusses subjected to static and wind loads
4. Analysis of a truss bridge subjected to IRC loading conditions
5. Analysis of determinate and indeterminate beams
6. Analysis of determinate and indeterminate portal frames subjected to static and dynamic loads
7. Analysis of a multi-storey building
8. Analysis of a multi-storey building with shear wall
9. Analysis of chimney/steel tower subjected to wind loads
10. Analysis of retaining wall/foundation/dam

3. Text books:

- a. W.F. Carroll, 'A primer for Finite Elements in Elastic Structures', John Willey & sons, INC. 1999.
- b. T. R. Chandrupatla, A. D. Belegundu, "Introduction to Finite Elements in Engineering", Pearson Education, 2002.

4. Reference books:

- a. I. M. Smith, D. V. Griffiths, L. Margetts, "Programming the Finite Element Method", Wiley, 5th Edition, 2013.



- b. K-J. Bathe, "Finite element procedures", Prentice Hall, 1996.
- c. J. N. Reddy, "Finite Element Methods", McGraw-Hill publications, 2006.
- d. P. Seshu, "Finite element Analysis", Prentice-Hall India Ltd, 2003.
- e. J. Fish, "A First Course in Finite Elements". Willey, 2007.
- f. Logan, D. L., "A first course in finite element method", CL Engineering; 5th edition, 2010.
- g. R. D. Cook, D. S. Malkus, M. E. Plesha, R. J. Witt, 'Concepts and Applications of Finite Element Analysis', John Willey & sons, INC. 2001.

5. Similarity Content Declaration with Existing Courses:

S.N.	Course Code	Similarity Content	Approx. % of Content
1.	ME-352	2D elements: trusses, beam	10%
2.	ME-601	Plane stress and strain; Axisymmetric stress analysis	10%

6. Justification for new course proposal if cumulative similarity content is > 30%:

Other Faculty interested in teaching this course: **Dr. Sandip Saha, Dr. Mahesh Reddy Gade**

Proposed by: **Dr. Rajneesh Sharma and Dr. Kaustav Sarkar**

School: **SE**

Signature _____ Date: _____

Recommended/Not Recommended, with Comments:

_____ Date: _____
Chairman, CPC

Approved / Not Approved

_____ Date: _____
Chairman, Senate

IIT Mandi

Proposal for a New course

Course Number : CE586P
Course Name : Mini Project
Credits : 0-0-6-3
Prerequisites : N/A
Intended for : PG (M. Tech. in Structural Engineering)
Distribution : Discipline Core
Semester : even

Preamble: This course has been designed to give an exposure of industrial project/research work to the first year M.Tech. in Structural Engineering students. In this course, the students will either visit the industry or join under any faculty member from school of engineering for concern project/research work in the area of structural engineering. This course will start at the end of the odd semester (August-December) and will continue till the end of even semester (February -July). The registration will begin in November and students need to register before the start of winter vacations.

Course Modules with Quantitative Lecture Hours:

There is no regular lecture hours or practical classes for this course as it will be carried out during summer vacations. The students will have to work on their specific projects on their own in a self-learning mode. The supervisor will give necessary inputs or suggestions throughout the work.

Evaluation pattern:

Their evaluation will be done in two stages: (1) presentation at the start of even semester (February -July), and (2) presentation and report at the end of even semester (February -July). The evaluation committee will be formed for presentations. The grades will be added in the 2nd semester mark sheet.

Similarity content declaration with existing courses:

Sl. No.	Course Code	Similarity Content	Approximate % of Content
1	NA	NA	NA

Justification for new course proposal if cumulative similarity content is > 30%:

Not Applicable

Textbooks:

There will be no specific textbook for this course.

Reference Books:



There will be no specific reference book for this course. Students are supposed to learn to review literatures.

Approvals:

Other faculties interested in teaching this course: All faculties from SE

Proposed by: Dr. Subhamoy Sen

School: School of Engineering (SE)

Signature:

Date:

Recommended / Not Recommended, with comments:

Chairman, CPC

Date: _____

Approved / Not Approved:

Chairman, Senate

Date: _____



IIT Mandi

Proposal for a New course

Course Number : CE688P
Course Name : Post Graduate Project (PGP) - I
Credits : 0-0-24-12
Prerequisites : Not Applicable
Intended for : M.Tech. in Structural Engineering Specialization
Distribution : Core
Semester : Odd

Preamble: This course is aimed to provide a platform for the students to explore new ideas and solution methodologies for solving problems related to the broader aspects of structural engineering. The students are expected acquire an ability to think independently and do research on advanced topics. The students will have to work on specific projects with the consent of their respective supervisor(s). The project objectives should be extendable to the next semester and form the basis of the course CE689P.

Course Modules with Quantitative Lecture Hours:

At the beginning of the semester the students have to present their project topics and planned work to be carried in next few months. At the end of the semester they have to submit a report and must give a presentation based on their complete work and future plans.

Evaluation pattern:

A committee shall be formed to evaluate the students' performance during the entire period through their report and seminars.

Similarity content declaration with existing courses:

Sl. No.	Course Code	Similarity Content	Approximate % of Content
1	NA	NA	NA

Justification for new course proposal if cumulative similarity content is > 30%:

Not Applicable

Textbooks:

As suggested by the supervisor.

Reference Books:

- (i) As suggested by the supervisor.
- (ii) As the students find necessary during working on their research project.



Approvals:

Other faculties interested in teaching this course: Any faculty interested to offer projects related to Structural Engineering specialization

Proposed by: Dr. Sandip Kumar Saha

Signature:

Date:

Recommended / Not Recommended, with comments:

Chairman, CPC

Date: _____

Approved / Not Approved:

Chairman, Senate

Date: _____



IIT Mandi

Proposal for a New Course

Course Number	: HS531
Course Name	Gender and Development
Credits	: 3-0-0-3
Prerequisites	: None
Intended for	: B.Tech. (3rd and 4th Yrs), M.A., Ph.D.
Distribution	: Discipline Elective for M.A. Development Studies, HSS Free Elective for B.Tech and Free Elective for others
Semester	: Even/Odd

1. Preamble:

This course will primarily engage with the debates surrounding the importance of women in development. The marginalisation of women and stereotypes regarding their capabilities have been the consequences of, as well as led to, gender biases in development. It aims at a more nuanced understanding of the relationship between gender and sustainable development. The course begins with the early feminist theoretical approaches that highlight the myopia regarding women in development and traces the evolution of these and such debates to the current perspectives. The focus is on how gendered approaches towards access to education, health, labour, security and policy lead to holistic and sustainable development.

2. Course Modules:

Module 1: Introduction to Development: Situating Women (2 lecture hours)

- Gender, development, locating women in development, empowerment

Module 2: Theoretical Approaches (15 lecture hours)

- Women In Development (WID), Women and Development (WAD), Gender and Development (GAD), : advancement of women by means of development, women's inclusion in development, relations between and role of patriarchy and capitalism, empowerment and



Module 3: Women, Labour, Education (7 lecture hours)

- Causes and consequences of gender gaps, broadening the definitions of work, inclusion of domestic sphere and sexual division of labour, globalisation and effects on women, role of NGOs and self help groups
- Access to education

Module 4: Women, Health, Reproductive Rights (6 lecture hours)

- Differences in health needs, access to health facilities
- Gendered nature of epidemics
- Decision making about fertility

Module 5: Gender, Environment, Sustainable Development (5 lecture hours)

- Ecosystems, environment and women: interdependencies, Ecofeminism

Module 6: Women and Security (5 lecture hours)

- Violence against women: causes and consequences

Module 7: Women and State (2 lecture hours)

- Decision making in public policy: women, state actors and global agencies

Total: 42 lecture hours

3. Textbooks:

- Visvanathan, Nalini, Lynn Duggan, Nan Wiegersma and Laurie Nisonoff (eds.). *The Women, Gender and Development Reader*. Second Edition, London: Zed Books, 2011.

4. References:

- Beneria, L. and S. Feldman (eds.). *Unequal Burden. Economic Crisis, Persistent Poverty, and Women's Work*. Boulder: Westview Press, 1992.
- Bouta, Tsjeard, Georg Frerks and Ian Bannon. *Gender, Conflict, and Development*. Washington DC: World Bank, 2005.
- Braidotti, R., E. Charkiewicz, S. Hausler and S. Wieringa. *Women, Environment and Sustainable Development: Towards a Theoretical Synthesis*. London: Zed Books, 1994.
- Cornwall, A. and A. Welbourn, A (eds). *Realizing Rights: Transforming Approaches to Sexual and Reproductive Wellbeing*. London: Zed Books, 2002.



- Cornwall, A., E. Harrison, and A. Whitehead (eds.). *Feminisms in Development: Contradictions, Contestations and Challenges*. London: Zed Books, 2007.
- Elson, D. (ed.). *Male Bias in the Development Process*, Second Edition. Manchester: Manchester University Press, 1995.
- Harcourt, W. (ed.) *Women Reclaiming Sustainable Livelihoods: Lost Spaces, Spaces Gained*. Basingstoke, UK: Palgrave Macmillan, 2012.
- Henshall-Momsen, J. *Gender and Development*. London: Routledge, 2004.
- Jain, Devaki. *Women, Development, and the UN: A Sixty-year Quest for Equality and Justice*. Bloomington: Indiana Press, 2005.
- Jeffery, R. and A. M. Basu (eds). *Girls' Schooling, Women's Autonomy and Fertility Change in South Asia*. New Delhi: Sage, 1996.
- Jeffery, P., Jeffery, R. and Lyon, A. *Labour Pains and Labour Power: Women and Childbearing in India*. London: Zed Books, 1989.
- Kabeer, N. 'Gender Equality and Women's Empowerment: A Critical Analysis of the Third Millennium Development Goal 1.' *Gender & Development* 13(1):13-24, 2005.
- Mies, M. and V. Shiva. *Ecofeminism*. London: Zed Books, 1993.
- Moser, C. *Gender Planning and Development: Theory, Practice and Training*, Routledge, London, 1993.
- Narayan, U. *Dislocating Cultures: Identities, Traditions and Third World Feminisms*. New York : Routledge, 1997.
- Razavi, S., and Miller, C., 1995, 'From WID to GAD: Conceptual Shifts in the Women and Development Discourse.' *Occasional Paper, UNRISD*, Geneva.
- Shiva, V. *Staying Alive: Women, Ecology and Development*. London: Zed Books, 1989.

5. Similarity Content Declaration with Existing Courses

S.N.	Course Code	Similarity Content	Approx. % of Content
------	-------------	--------------------	----------------------

5. Justification for new course proposal if cumulative similarity content is > 30%: N/A

Approvals:

Proposed by: Dr. Suman

School: SHSS



Other Faculty interested in teaching this course:

Signature: _____

Date: 20.09.2018

Recommended/Not Recommended, with Comments:

Date: _____

Chairman, CPC

Approved/Not Approved

Date: _____

Chairman, Senate

Comments received:

1. This is regarding the proposed course on Gender and Development. It will be fruitful to include a section on legislation concerning reproductive rights in Module 4. This section can discuss issues such as abortion laws, and the debates that they precipitated both within the parliament as well as in the civil society at large. Otherwise, I find this course highly recommendable.
2. Module 1: Introduction to Development-Situating Women: The focus could be on 'gender' and 'women'. However, gender bias in the development process is of-course worth discussing. Somewhere, a discussion is also required on "gender as a social construct".
3. Module 2: WID, WAD and GAD should be a separate module from which "advancement of women by means of development" etc. may be removed and placed somewhere else. Also, should we call them "theoretical approaches" or "A shift in the analytical framework"? I'm not very sure. We need to check it. A couple of analytical frameworks, such as the Gender Analysis Matrix, can be included in this section since 15 lectures are assigned to this.
4. Module 3: Can we rename it as "Gender, Labour and Education"? The content goes well this.
5. Module 5: The content may be reflected as "environment and gender" instead of "environment and women". Broadly, the focus, in my opinion, of the course may be "gender and development" and not "women and development".
6. Since Module 3-7 are equally important, contents need be almost of similar volume and lectures can be equally distributed. Only two lectures for Women and State and seven for labour and education seem to be a little inequitable.
7. Finally, I would recommend few more topics for inclusion. They can be fitted under existing heads. They are: i) Role of the third gender in development - going beyond man and woman (History, recent movements and new legal frameworks can be discussed) ii) Gender and workplace. iii) Can we include some fiction/non-fiction literary reading to explain the gender lens? (Wild suggestion)
8. I suggest you include: Liberal Feminism; Socialist-Marxist Feminism; and, Radical Feminism in Theoretical Approaches. Also, try bringing in Indian case especially Altakerian Model and the idea of ideal Hindu women; Action-Academic Gap; Views of Periyar, Gandhi and Ambedkar. Women's Movement need to be accommodated as it has direct questions on development models and patriarchy. At least, a brief discussion on Intersectionality is an important tool to diagnose women's questions.

Replies received:

1. It was an oversight, has been added.



2. The course moves from men to women to gender and then gender and sustainable development. The introduction is about: what is gender, how it is constructed and what it constitutes, and so on.
3. These are the theoretical approaches in gender and development. The first one WID was all about advancement of women by means of development. The Module has 15 hours since each approach needs to be dealt with in detail as well as their respective criticisms before moving on to the next one. Until this section is clear to the students, none of the later modules will make the impact they are supposed to. The content I mention in the module is related to WID, WAD, and GAD respectively.
4. Changed it, though so far the focus in these domains is on the inclusion of women.
5. As I mentioned in point 4, the focus is on women and their centrality in protecting the environment as well as their dependency on the environment.
6. It is not inequitable as most of the portion on policy and state has been covered under various headings above. Module 4 also covers legislation and debates (had forgotten to mention earlier, added now), as also Module 3 and 6. Added one more hour.
7. These topics are covered under Module 2, now elaborated. i. Part of gender debates and a core ingredient of the course. ii. Module 3 on labour and globalisation covers workplace, now spelled out. iii. Outside the ambit of this course, which anyways covers a lot of ground, but students are free to read.
8. Module 2 covers feminism, which will touch upon movements in India. I have written them separately as otherwise it was creating some confusion. Added a section on intersectionality.



IIT Mandi
Proposal for a New Course

Course Number	: HS531
Course Name	: Gender and Development
Credits	: 3-0-0-3
Prerequisites	: None
Intended for	: Ph.D./Masters/B.Tech. (3rd and 4th Yrs)
Distribution	: Discipline Elective for M.A. Development Studies, HSS Free Elective for B.Tech. and Free Elective for others
Semester	: Even/Odd

1. Preamble:

This course will primarily engage with the debates surrounding the importance of gender in development. The marginalisation of women and stereotypes regarding their capabilities have been the consequences of, as well as led to, gender biases in development. It aims at a more nuanced understanding of the relationship between gender and sustainable development. The course begins with the early feminist theoretical approaches that highlight the myopia regarding women in development, and traces the evolution of these and such debates in order to reach the current perspectives on gender. The focus is on how gendered approaches towards access to education, health, labour, security and policy lead to holistic and sustainable development.

2. Course Modules:

Module 1: Introduction to Development: Situating Gender (2 hours)

- Gender, development, locating women in development, empowerment

Module 2: Theoretical Approaches (15 hours)

- Sex and gender
- Feminist theories, feminism in India
- Intersectionality
- Women In Development (WID): advancement of women by means of development
- Women and Development (WAD): women's inclusion in development
- Gender and Development (GAD) : gender and development, relations between and role of patriarchy and capitalism
- Empowerment

Module 3: Gender, Labour, Education (6 hours)

- Causes and consequences of gender gaps



- Broadening the definitions of work, inclusion of domestic sphere and sexual division of labour
- Globalisation and effects on women
- Role of NGOs and self help groups
- Access to education

Module 4: Gender, Health, Reproductive Rights (6 hours)

- Differences in health needs, access to health facilities
- Gendered nature of epidemic
- Decision making about fertility
- Abortion laws, discussions and legislation

Module 5: Gender, Environment, Sustainable Development (5 hours)

- Ecosystems, environment and women: interdependencies
- Ecofeminism

Module 6: Women and Security (5 hours)

- Violence against women: causes and consequences

Module 7: Gender and State (3 hours)

- Decision making in public policy: women, state actors and global agencies

3. Textbooks:

- Visvanathan, Nalini, Lynn Duggan, Nan Wiegiersma and Laurie Nisonoff (eds.). *The Women, Gender and Development Reader*. Second Edition, London: Zed Books, 2011.

4. References:

- Beneria, L. and S. Feldman (eds.). *Unequal Burden. Economic Crisis, Persistent Poverty, and Women's Work*. Boulder: Westview Press, 1992.
- Bouta, Tsjeard, Georg Frerks and Ian Bannon. *Gender, Conflict, and Development*. Washington DC: World Bank, 2005.
- Braidotti, R., E. Charkiewicz, S. Hausler and S. Wieringa. *Women, Environment and Sustainable Development: Towards a Theoretical Synthesis*. London: Zed Books, 1994.
- Cornwall, A. and A. Welbourn, A (eds). *Realizing Rights: Transforming Approaches to Sexual and Reproductive Wellbeing*. London: Zed Books, 2002.
- Cornwall, A., E. Harrison, and A. Whitehead (eds.). *Feminisms in Development: Contradictions, Contestations and Challenges*. London: Zed Books, 2007.
- Elson, D. (ed.). *Male Bias in the Development Process*, Second Edition. Manchester: Manchester University Press, 1995.
- Harcourt, W. (ed.) *Women Reclaiming Sustainable Livelihoods: Lost Spaces, Spaces Gained*. Basingstoke, UK: Palgrave Macmillan, 2012.
- Henshall-Momsen, J. *Gender and Development*. London: Routledge, 2004.
- Jain, Devaki. *Women, Development, and the UN: A Sixty-year Quest for Equality and Justice*. Bloomington: Indiana Press, 2005.
- Jeffery, R. and A. M. Basu (eds). *Girls' Schooling, Women's Autonomy and Fertility Change in South Asia*. New Delhi: Sage, 1996.



IIT Mandi
Proposal for a New Course

Course Number	: HS553P
Course Name	: Field Study
Credits	: 0-0-8-4 (L-T-P-C) ¹
Prerequisites	: None
Intended for	: MA in Development Studies
Distribution	: Discipline Core for MA in Development Studies
Semester	: Summer session (between Semester II and Semester III)

1. Preamble:

One of the objectives of the M.A. in Development Studies program is to expose the students to real-world developmental challenges in different communities. This course is meant to address this objective by encouraging students to visit and stay in the field for an extended period of time. The motivation is as follows: The first task of a development practitioner is to 'diagnose' the problem on the ground, to understand the 'socio-economic nuances' of the problem and to have a thorough understanding of the 'agencies' who are already working on the ground. This course is meant to provide field emersion to M.A. students, who aspire to become development practitioners in the near future.

2. Course Modules:

In this course, students will have to go and stay with a rural/urban community for a duration of approximately 6-weeks between their 2nd and 3rd Semester. This course is expected to help students to learn how to diagnose the development challenges and get the praxis right.

In the first week, before leaving for field-work, students will be asked to choose a place from a list of places. These places will be pre-identified after discussion with faculty advisors. Students may propose places from their side; however, in this situation, they need to justify the place of visit in discussion with their faculty advisor (place profiling, as discussed below, may help this justification). Furthermore, in the first week, before leaving for field-work, the students will be asked to do a socio/economic/cultural/geographical profiling of the place of visit. They need to discuss their profile with their faculty advisor before they are permitted to leave for the place of visit.

Around a 3-week period, students will be asked to send a write-up to their faculty advisor detailing their experience (based upon a diary entry) about their place of visit as well as certain unique problems in the place (they need to provide details about the problem as much as possible).

Upon return from the field visit, students will be asked to submit a field report and diary. Also, students will be asked to make a presentation on their experience and findings (they may also suggest possible solutions to the problems).

¹ A 4 credit lab course is equivalent to 8 lab hr/week during Feb-Jun or Aug-Dec semester (14 weeks under each semester). This adds up to 112 hours. Since students have to take up this Field Study Course during the Summer Term over a period of 4-6 weeks, weekly hours will be adjusted accordingly keeping the total to be 112 hrs.



Pattern of evaluation: The evaluation will be based the place profiling document, diary entry, a final field study report, and presentation after returning from their field stay.

3. Textbooks:

Scheyvens, R. (2014). *Development Fieldwork: A Practical Guide*. Sage Publishing. Palmerston North, New Zealand.

4. Reference:

Any relevant journal paper.

5. Similarity Content Declaration with Existing Courses: None

6. Justification for new course proposal if cumulative similarity content is > 30%: NA

Approvals:

Proposed by: SHSS

Other Faculty interested in teaching this course: NA

Signature: _____

Date: _____

Recommended/Not Recommended, with Comments:

Date: _____

Chairman, CPC

Approved/Not Approved

Date: _____

Chairman, Senate



IIT Mandi
Proposal for a New Course

Course Number : HS551P
Course Name : Development Studies Practicum I
Credits : 0-0-8-4 (L-T-P-C)
Prerequisites : None
Intended for : MA in Development Studies
Distribution : Discipline Core for M.A. in Development Studies
Semester : Even/Odd

1. Preamble:

M.A. in Development Studies aims to create a pool of development practitioners and/or academics, who will be well equipped to participate in the process of informed decision making with regard to sustainable development. The relevance of such decision making will be local, regional and global. This requires skills to deliberate upon development challenges and their nuances, research, writing and communication. This is a 4-credit course, under which groups of 3-4 students will have the opportunity to work under the supervision of one/two faculty members from different Schools to address an existing development challenge from a multidisciplinary perspective. This will be similar to a guided mini project and will be particularly helpful both in terms of understanding and dealing with several dimensions of a problem and team work at the same time. **After completion of this, the students have to take up one more similar Practicum course (HS552P).**

2. Course Modules:

Faculty members will float the topics related to development challenges. A student/group of students interested in working on any particular topic may consult the faculty and the faculty can float the topic accordingly.

The group of students will work on the topic. The work can be theoretical, archival or empirical.

Evaluation will be based on

1. A mid-term presentation on the progress of work
2. Open-house presentation at the end of the semester
3. Submission of a final report.

3. Textbook

Will be suggested by the faculty mentor as per requirement of each group.

4. References:

Will be suggested by the faculty mentor as per requirement of each group.

5. Similarity Content Declaration with Existing Courses: None

6. Justification for new course proposal if cumulative similarity content is > 30%: NA



Approvals:

Proposed by: NA **School:** SHSS

Other Faculty interested in teaching this course:

Signature: _____ **Date:** _____

Recommended/Not Recommended, with Comments:

----- **Date:** _____

Chairman, CPC

Approved/Not Approved

----- **Date:** _____

Chairman, Senate



IIT Mandi
Proposal for a New Course

Course Number : HS552P
Course Name : Development Studies Practicum 2
Credits : 0-0-8-4 (L-T-P-C)
Prerequisites : None
Intended for : MA in Development Studies
Distribution : Discipline Core for M.A. in Development Studies
Semester : Even/Odd

1. Preamble:

M.A. in Development Studies aims to create a pool of development practitioners and/or academics, who will be well equipped to participate in the process of informed decision making with regard to sustainable development. The relevance of such decision making will be local, regional and global. This requires skills to deliberate upon development challenges and their nuances, research, writing and communication. This is a 4-credit course, under which groups of 3-4 students will have the opportunity to work under the supervision of one/two faculty members from different Schools to address an existing development challenge from a multidisciplinary perspective. **This is the second practicum that the students have to take up. The topic may be a continuum of what they have worked on under the first Practicum (HSxxxP: Development Studies Practicum 1) or may be different from that.**

2. Course Modules:

Faculty members will float the topics related to development challenges. A student/group of students interested in working on any particular topic may consult the faculty and the faculty can float the topic accordingly.

The group of students will work on the topic. The work can be theoretical, archival or empirical.

Evaluation will be based on

1. A mid-term presentation on the progress of work
2. Open-house presentation at the end of the semester
3. Submission of a final report.

3. Textbook

Will be suggested by the faculty mentor as per requirement of each group.

4. References:

Will be suggested by the faculty mentor as per requirement of each group.

5. Similarity Content Declaration with Existing Courses: None

6. Justification for new course proposal if cumulative similarity content is > 30%: NA

Approvals:



Proposed by: NA **School:** SHSS

Other Faculty interested in teaching this course:

Signature: _____ **Date:** _____

Recommended/Not Recommended, with Comments:

----- **Date:** _____

Chairman, CPC

Approved/Not Approved

----- **Date:** _____

Chairman, Senate



IIT Mandi
Proposal for a New Course

Course Number	: HS 523
Course Name	: Decision-Making for Social Change
Credits	: 3-0-0-3
Prerequisites	: None
Intended for	: M.A. Development Studies/M.S./Ph.D./B. Tech. students
Distribution	: Discipline Elective for M.A. Development Studies / HSS Free Elective for B. Tech. students / Free Elective for other students
Semester	: odd/even

1. Preamble:

Developmental problems such as improving healthcare, conserving energy, providing universal education, and reducing global poverty require people to make decisions that cause social change. Such decisions need to be free from biases and heuristics and enable us to maximize utility. Thus, making good decisions for social change requires one to be aware of several pitfalls, which are likely to affect our decisions. This elective course will compliment other courses in the MA development studies program by exposing students to several decision pitfalls, which would help them improve decision-making in the real world. Topics in this course would enable students to understand the characteristics of good decision-making. Topics include mental models and system thinking; framing; decision making under risk; psychological biases that adversely affect people's decisions; and, methods for influencing individuals' and group's behavior, ranging from incentives and penalties to "nudges". This course will help students in overcome decision pitfalls that are likely to hinder sustainable development.

2. Course Modules with Quantitative Hours:

Module 1: Mental Models, System Thinking, and Probability Judgments (6 hours)

Introduction to system thinking, introduction to mental models, confirmation bias, identifying and improving mental models, linear models of judgement, fast-and-frugal heuristics, representativeness heuristic, availability heuristic, support theory, judgment of condition probability, anchoring-and-adjustments in judgements.

Module 2: Decision-making under Risk and Cognitive Biases (6 hours)

Expected-utility theory, prospect theory, framing and framing effect, decisions under uncertainty, endowment effect, status-quo bias, omission bias, sunk-cost effect, single-action bias, finite pool of worry, fundamental computational bias, single action bias, intuitive versus reflective judgements.

Module 3: Judgments involving Time and Group Decision Making (6 hours)

Theory of time preference, reasons for time preferences, inter-temporal choices, hyperbolic discounting, information sharing in groups, group polarization, group think, techniques for improving group decision-making: brainstorming, decision rules, systematic decision procedures, leadership.

Module 4: Dynamic and Naturalistic Decision Making (6 hours)

Use of microworld games, feedback, feedback delays, instance-based learning, individual differences in DDM, nature of naturalistic decision making, image theory, recognition-primed decision-making.

Module 5: Perception of Risk (6 hours)

Revealed preference approach to risk, risk dimensions, factors underlying risk dimensions, affective influence on risk, social amplification of risk, influence of personality on risk, influence of gender on risk, influence of race on risk, expert versus lay perception of risk, risk communication.

Module 6: Optimism, Confidence, and Nudges (6 hours)

Overconfidence, calibration curves, cross-cultural differences, case study on investment behavior, introduction to nudges, nudging over time, influence, nudging in the real world.

Module 7: Social Dilemmas and Environmental Decision Making (6 hours)

Introduction to social dilemmas, prisoner's dilemma, tragedy of commons, public goods, factors affecting social dilemmas, environmental biases – reliance on correlation heuristics and violation of mass balance, factors affecting correlation heuristic and violation of mass balance (backgrounds, type of feedback).

3. Textbooks:

Hardman, D., & Hardman, D. K. (2009). *Judgment and decision making: Psychological perspectives* (Vol. 11). John Wiley & Sons.

Kim, N. (2017). *Judgment and Decision-making: In the Lab and the World*. Macmillan International Higher Education.

4. Reference:

Bazerman, M.H. and Moore, D.A. (2008). *Judgment in Managerial Decision Making, 7th ed.* New York: Wiley.

Fischhoff, B. (2012). *Judgment and Decision Making*. Routledge

Hastie, R., & Dawes, R. M. (2010). *Rational choice in an uncertain world: The psychology of judgment and decision making*. Sage.

Plous, S. (1993). *The psychology of judgment and decision making*. McGraw-Hill Book Company.

Shome, D., Marx, S., Appelt, K., Arora, P., Balstad, R., Broad, K., et al. (2009). The psychology of climate change communication: a guide for scientists, journalists, educators,

political aides, and the interested public. New York: Center for Research on Environmental Decisions.

5. Similarity Content Declaration with Existing Courses

S.N.	Course Code	Similarity Content	Approx. % of Content
1.	HS 616	Certain topics in decision-making under risk and uncertainty and biases	14%
2.	EN 504	Certain topics in biases	10%

6. Justification for new course proposal if cumulative similarity content is > 30%: N.A.

Approvals:

Other Faculty interested in teaching this course:

**Proposed by: Varun Dutt, Shyamasree Dasgupta
Social Sciences**

School: School of Humanities and

Signature: _____

Date: _____

Recommended/Not Recommended, with Comments:

Date: _____

Chairman, CPC

Approved/Not Approved

Date: _____

Chairman, Senate



IIT Mandi
Proposal for a New Course

Course Name	: Statistical Methods
Course Number	: HS550
Credits	: 3-0-2-4
Prerequisites	: A prior course in probability, statistics and random processes; or, consent of the instructor
Intended for	: Ph.D. and Masters
Distribution	: Discipline Elective for M.A. Development Studies, Free elective for others
Semester	: Even/Odd

1. Preamble:

Statistical methods form the basic ingredients for research in engineering, basic sciences, and humanities and social sciences. Currently, there exist Institute courses that cover basics of technical writing, research methodology, and certain advanced statistical methods (e.g., time-series analyses, probability and statistics) **that are mainly targeted to varied applications in engineering and sciences (such as MA524)**. However, there exists no single course that holistically covers topics in basic data analyses (descriptive statistics), probability and random processes, parametric and non-parametric inferential statistics, experimental design, and advanced statistical methods (e.g., analysis of variance and regression) **with significant practical applications that are targeted for understanding the research problems in social sciences. This course fills this gap by providing a holistic coverage of these statistical topics over one-semester of study.** This course is an elective course primarily designed for graduate students to help them in their research. However, undergraduate students are may also take this course as it is likely to help them in their project courses like Design Practicum, Interactive Socio-Technical Practicum, and Major Technical Project. In the lab sessions, the course intends to provide a hands-on training to the students on practical applications of several statistical methods that are covered. The course will use statistical packages, which are available for teaching on campus.

2. Modules with lecture hours:

Module 1: Representation of Data and Descriptive Statistics (4 hours+2 lab hours)

Raw data and frequency data- tabular and diagrammatic representation; concept of moments; measures of central tendency, dispersion, skewness, and Kurtosis; quartile and percentile – their use in the measurement of inequality, Gini Coefficient and Lorenz curve; Bivariate frequency distribution, correlation coefficients- Pearson and Spearman coefficients.

Lab: Exercise on various ways of representing quantitative data; Measuring Central tendency, dispersion, skewness, and kurtosis of a given dataset; deriving quartile and percentile; Deriving Gini coefficient and Lorenz curve to understand inequality present in a dataset; calculation of correlation coefficients of various forms.



Module 2: Probability and Random Variables (4 hours)

Basic concepts in set theory as applied in probability; concept of probability- classical, frequency based, axiomatic approach, Bayesian probability; conditional probability, Bayes theorem, statistical independence of events; random variables – discrete and continuous, probability distribution functions, cumulative distribution functions, Expectation and Variance of a random variable, joint distribution of two random variables and their correlation, law of large number.

Module 3: Random Sampling and Parametric Statistical Inference (8 hours+6 lab hours)

Concepts of population and sample, parameter and statistic, random sampling and sampling distribution, Central Limit Theorem; Expectation and Standard Error of sample mean and sample proportion; concepts of theoretical distribution: Normal distributions and four fundamental distributions derived from Normal distribution – Standard Normal, Chi-square, t and F distribution; estimation and testing of hypothesis – point estimation and interval estimation of parameters, Maximum Likelihood Estimator, hypothesis testing, and calculation of effect size.

Lab: Drawing random samples from the population –simple random sampling (with and without replacement); Fitting distribution curves to a given dataset; Statistical estimation – parametric point estimation and interval estimation; Maximum Likelihood Estimator, Hypothesis testing and calculation of effect size.

Module 4: Non-parametric Statistical Inference (8 hours + 6 lab hours)

Need for non-parametric tests, estimation of location and dispersion, tolerance interval; one sample and two sample non-parametric tests for location and dispersion (involving independent and related samples); non-parametric measures and tests of association.

Lab: Carrying out non-parametric tests, estimation of location and dispersion, tolerance interval and tests of association.

Module 5: Designs of Experiment (8 hours + 6 lab hours)

Experimental design strategies; Blocking and Randomization; Factorial design of experiments.

Lab: Designing a suitable experiment to test a given hypothesis, testing the hypotheses by changing the variables within the experiment. Carrying out experiments based on Blocking and Randomization; Factorial design of experiments.

Module 6: Regression Analysis and Analysis of Variance (10 hours + 8 lab hours)

Gauss Markov theorem and Ordinary Linear Least Square regression; interpreting regression coefficients, concepts of residual, fitted value and goodness of fit, test of significance; **diagnostic tests; binary**



explanatory variables; multiple regression analysis; two-way independent ANOVA and two-way Mixed ANOVA.

Lab: Estimate multiple linear regressions **to carry out the diagnostic tests**; finding out the key determinants; interpretation of estimates, testing the significance and carrying out an Analysis of Variance (ANOVA).

3. Textbooks:

- Field, A. P., Miles, J., and Field, Z. (2012). *Discovering statistics using R*. London: Sage.
- Wooldridge, J. M. (2013). *Introductory Econometrics: A Modern Approach*. South-Western, Cengage Learning. Ohio, USA. ISBN-13: 978-1-111-53104-1.

4. References:

- STATA Manual: <https://www.stata.com/manuals13/u.pdf>
- Heiman, G. W. (2011). *Basic Statistics for the Behavioral Sciences*. Sixth Edition. Wadsworth.
- Field, A. P. (2013). *Discovering statistics using IBM SPSS Statistics*. London: Sage.
- Agresti, A., and Finlay, B. *Statistical Methods for the Social Sciences*. (1997). Dellen, San Francisco.
- Arnold, J. C., and Milton, J. S. (2003). *Introduction to Probability and Statistics*. McGraw-Hill.
- Gibbons, J. D. and Chakraborti, S. (2003). *Nonparametric Statistical Inference*, Fifth Edition. Marcel Dekker, Inc.
- Johnston, J. and DiNardo, J. (2006). *Econometric Methods*, 4th Edition. McGraw-Hill
- Montgomery, D. C. and Runger, G.C. (2011) *Applied Statistics and Probability for Engineers*. 5th ed. New Delhi: Wiley-India.
- Montgomery, D. C. (2012). *Design and Analysis of Experiments*, 8th Edition. John Wiley & Sons, Inc.
- Ross, S. M. (2014). *Introduction to probability and statistics for engineers and scientists*. Academic Press.
- Rohatgi, V. K. and Saleh, A. K. E. (2015). *An Introduction to Probability and Statistics*.

4. Similarity Content Declaration with Existing Courses: Note that existing HS550 (Statistical Methods- 3-0-0-3) and HS550P (Statistical Methods: Practical 0-0-2-1) have been merged and proposed as HS550: Statistical Methods (3-0-2-4). Existing HS550 (Statistical Methods- 3-0-0-3) and HS550P (Statistical Methods: Practical 0-0-2-1) will not be offered separately once HS550: Statistical Methods (3-0-2-4) is approved.

Course	Content	Overlap
MA 524	Probability and random variable; Sampling distributions; point and interval estimation. Testing of	~25%



	hypothesis, Goodness of fit, linear regression, ANOVA.	
--	--	--

5. Justification for new course proposal if cumulative similarity content is > 30%:N/A

Approvals:

Proposed by: Shyamasree Dasgupta

School: SHSS

Other Faculty interested in teaching this course: Dr. Varun Dutt, Dr. Puran Singh, Dr. Ramna Thakur

Signature: _____

Date: _____

Recommended/Not Recommended, with Comments:

Date: _____

Chairman, CPC

Approved/Not Approved

Date: _____

Chairman, Senate

IIT Mandi
Proposal for a New Course

Course Name : Post-Graduate Project-I
Course Number : PH 518P
Credits : 0-0-6-3
Prerequisites :
Intended for : M.Sc. in Physics
Distribution : Core for M.Sc. in Physics
Semester : Odd semester of M.Sc. in Physics

Preamble: This course is aimed at giving research exposure to students by giving small projects to them in physics related areas

Course outline: Each student will be given a project which they have to complete during their first semester

Modules:

Faculty members of physics and related areas can offer this project course. Towards the end of vacation they have to submit their report and must give a seminar based on their work. Evaluation will be based on student's performance during the period and their report and talk. The evaluation will be carried out by the faculty members involved in the program.

Textbooks: *As advised by the faculty member*

References: *As advised by the faculty member*

Approvals:

Proposed by: Course Interest Group

School: School of Basic Sciences (SBS)

Signature:

Date:

.....
Recommended/Not Recommended, with Comments:

Chairman, CPC

Date:

Approved/Not Approved

Chairman, Senate

Date:



IIT Mandi
Proposal for a New Course

Course Name : Post-Graduate Project-II
Course Number : PH 519P
Credits : 0-0-16-8
Prerequisites :
Intended for : M.Sc. in Physics
Distribution : Core for M.Sc. in Physics
Semester : Even semester of M.Sc. in Physics

Preamble: This course is aimed at giving research exposure to students by giving small projects to them in physics related areas

Course outline: Each student will be given a project which they have to complete during their first semester

Modules:

Faculty members of physics and related areas can offer this project course. Towards the end of vacation they have to submit their report and must give a seminar based on their work. Evaluation will be based on student's performance during the period and their report and talk. The evaluation will be carried out by the faculty members involved in the program.

Textbooks: As advised by the faculty member

References: As advised by the faculty member

Approvals:

Proposed by: Course Interest Group

School: School of Basic Sciences (SBS)

Signature:

Date:

.....
Recommended/Not Recommended, with Comments:

Chairman, CPC

Date:

Approved/Not Approved

Chairman, Senate

Date:



IIT Mandi Proposal for a New Course

Course Name	: Superconductivity
Course Number	: PH 605
Credits	: 3-0-0-3
Prerequisites	: Quantum Mechanics-I (PH 513), Condensed Matter Physics (PH 523)
Intended for	: PhD/PG/UG
Distribution	: Elective PG/Elective UG
Semester	: Odd/Even

1. Preamble: The course is intended for the physics students at the advanced undergraduate level, or beginning graduate level. It is designed to familiarize students with the phenomenon of superconductivity, its basic theory and the various experimental techniques employed to understand its exotic physics.

2. Course Modules:

Module-1

Introduction: Historical perspective, Resistivity, Specific heat, Thermal conductivity, Magnetic Susceptibility and Hall Effect of normal metal; Zero resistance, persistent current, Meissner effect, London-London equations, Penetration depth and critical field. [9]

Module-2

Phenomenological theory of Superconductivity: Free energy, First order and second order transition, specific heat, thermal conductivity, Superconducting order parameter, Ginzburg-Landau equations and its predictions, Coherence length, Type-I and Type-II superconductors, The vortex lattice. Phase coherence, Flux quantization. [9]

Module-3

Microscopic Theory of Superconductivity: Isotope effect and its significance. The Cooper problem, Formation of Cooper pairs, BCS wave function, Existence of energy gap, Finite temperature properties of BCS ground state. [9]

Module-4

Tunnelling and energy gap: Tunnelling phenomenon, DC Josephson Effect. AC Josephson Effect. Inverse AC Josephson Effect and Shapiro jumps, Superconducting quantum interference device (SQUID). [7]

Module-5

Unconventional Superconductors: Alternate pairing mechanisms (e.g. spin-triplet, d-wave etc.), Symmetry of the gap function, Experimental methods for probing Nodal structure, Parity, spin state, Lattice symmetry and internal structure, Heavy Fermion, High temperature superconductivity, Cuprates, and Fe based Superconductors. [8]

3. Textbooks:

- Superconductivity by J.B. Ketterson and S.N. Song (Cambridge University Press 1999)

4. References:

- Introduction to Superconductivity by M. Tinkham (McGraw-Hill, Inc, 1996)
- Unconventional Superconductors by Grenet Goll (Springer-Verlag Berlin Heidelberg 2006)
- Superconductivity by Charles p. Poole Jr., H.A. Farach, R.J. Creswick, R. Prozorov (Elsevier, The Netherlands 2007)

- Superconductivity, Superfluids and Condensates by James F. Annett (Oxford University Press, 2004)

5. Similarity Content Declaration with Existing Courses:

S.N.	Course Code	Similarity Content	Approx. % of content
1.	Condensed matter physics	PH 523	~10%
2.	Advanced Condensed Matter Physics	PH 603	~15%

6. Justification for new course proposal if cumulative similarity is >30% : NA

Approvals:

Other Faculty members interested in teaching this course: Pradeep Kumar, K. Mukherjee

Proposed by: C. S. Yadav

School: SBS

Signature:

Date:

.....
Recommended/Not Recommended, with Comments:

Chairman, CPC

Date:

Approved/Not Approved

Chairman, Senate

Date:



IIT Mandi

Proposal for a New Course

Course Name: **Post Graduate Project (CSP) Part I**

Course Number: EE626P

Credit: 0-0-20-10

Prerequisites: Year I courses of M.Tech (Communications and Signal Processing)

Students intended for: M.Tech. Communications and Signal Processing

Elective or Compulsory: Compulsory

Course Objectives: This course is meant to provide comprehensive project work for M.Tech Communications and Signal Processing 3rd semester students. Project will be based on specific research problems taken up by students under the supervision of one or more faculty mentors and the topics should strongly relate to the Communications or Signal Processing or both. The course allows the students to carry a part of their thesis in Industry or other academic institutes inside or outside India, provided they have a guide from within IIT Mandi. The course will assist the student to undertake R&D, report writing, presentation and defense.

Contents: Project work is based on experimental or computational work from broad research areas that are related to M.Tech Communications and Signal Processing. The student will be assigned to one or more Faculty members who will supervise the students work.

Evaluation: Every student will be evaluated by a committee whose members will be nominated by the faculty advisor.

Proposed by: Siddartha Sarma

School: SCEE

Signature:

Date:

Recommended/Not Recommended, with Comments:

Chairman, CPC
Approved / Not Approved

Date: _____

Date: _____



Chairman, Senate

A handwritten signature in blue ink, consisting of several loops and a final vertical stroke, located in the upper right quadrant of the page.

Course Proposal

Name: Independent study

Course Number: EE 630P

Credits: 0-0-6-3

Prerequisites: EE 512, EE 519P, EE 520, EE 524 or with the consent of FA

Intended for: M.Tech (VLSI) – Core course

Semester: Odd/Even

Objective: Independent study course is brought into the realms of M.Tech (VLSI) programme to enable a student pursue a research topic of interest under the supervision of a faculty member hereafter referred to as advisor for the independent study. Independent Study is designed to provide credit for research methodology, survey of literature leading to problem identification and extended knowledge focused in the field of VLSI.

Contents: Independent Study is based on experimental or computational work from broad areas that are related to M.Tech (VLSI). The student will be assigned to one or more Faculty members who will supervise the students work.

Evaluation: Every student will be evaluated by a committee whose members will be nominated by the faculty advisor.

Approvals:

Proposed by: Dr. Shubhajit Roy Chowdhury, Dr. Srikant Srinivasan, Dr. Hitesh Shrimali

School: School of Computing and Electrical Engineering

Signature_____Date_____

Recommended/Not Recommended, with Comments:

_____ Date:_____

Chairman, CPC Approved / Not Approved

_____ Date:_____

Chairman Senate



Proposal for credit distribution for I-PhD (Physics) Program

Sem	Course	Credits	MSc	I-PhD	Revision
I	PH 511 Mathematical Physics	4-0-0-4	C	C	
	PH 512 Classical Mechanics	4-0-0-4	C	C	
	PH 513 Quantum Mechanics	3-0-0-3	C	C	
	PH 514 Electronics	3-0-0-3	C	C	
	PH 515P Physics Laboratory	0-0-5-3	C	C	
	Technical Communications	1-0-0-1	C	C	
	Elective (Outside Discipline)	3-0-0-3	E	-	
	PH 516 Research Project I	0-0-4-2	-	C	
Winter	PH 517 Research Project II	0-0-6-3	-	C	0-0-8-4
II	PH 521 Electromagnetic Theory	4-0-0-4	C	C	
	PH 522 Statistical Mechanics	4-0-0-4	C	C	
	PH 523 Cond. Matter Physics	3-0-0-3	C	C	
	PH 524 Atom. Mol. Physics	3-0-0-3	C	C	
	PH 525P Electronics Lab. Pract.	0-0-5-3	C	C	
	Elective	3-0-0-3	E	-	
	PH 526 Research Project III	0-0-6-3	-	C	
	Summer	PH 527 Research Project IV	0-0-6-3	-	C
III	PH 611P Exp. Res. Techniques	0-0-7-4	C	C	
	PH 614 Seminar and Report	0-0-4-2	C	C	
	PH 613 Spe. Topics. in QM	3-0-0-3	C	E	C
	PH 518P PG Project-I	0-0-6-3	C	-	
	PH 615P Mini Thesis-1		-	C	
	Elective	3-0-0-3	E	E	
	Elective	3-0-0-3	E	E	
	Elective (Outside Discipline)	3-0-0-3	E	-	
IV	PH 621 Comput. Meth. Physics	2-0-4-4	C	C	
	PH 519P PG Project-II	0-0-16-8	C	-	
	PH 622 Mini Thesis -II	0-0-6-3	-	C	0-0-16-8
	Elective	3-0-0-3	E	E	
	Elective	3-0-0-3	E	-	-
	Over All		80	74	80
V-VI	Electives (5) for 15 credits	3-0-0-3	-	15	9
				89	89

Summary of corrections.**Courses**

- PH 517 Research Project II (Winter Project)
- PH 622 Mini Thesis II
- Typo Correction to course PH 621 in course details
- PH 613 Special Topics in Quantum Mechanics

Corrections

[0-0-6-3] to [0-0-8-4]
 [0-0-6-3] to [0-0-16-8]
 [3-1-0-4] to [2-0-4-4]
 Make as Core

MSc: Total: 36 (Theory) + 10 (Lab) + 13 (Res) + 21 (Elect) = 80 Credits

I-PhD: Total: 36 (Theory) + 10 (Lab) + 25 (Res) + 9 (Elect) = 80 + 9 (Elect) = 89 Credits

Annexure-1

Final Course credit distribution for MSc and I-PhD (Physics) Program

Semester	Course	Credits	MSc	I-PhD
I	PH 511 Mathematical Physics	4-0-0-4	C	C
	PH 512 Classical Mechanics	4-0-0-4	C	C
	PH 513 Quantum Mechanics	3-0-0-3	C	C
	PH 514 Electronics	3-0-0-3	C	C
	PH 515P Physics Laboratory	0-0-5-3	C	C
	Technical Communications	1-0-0-1	C	C
	Elective (Outside Discipline)	3-0-0-3	E	-
	PH 516 Research Project I	0-0-4-2	-	C
Winter Vacations	PH 517 Research Project II	0-0-8-4	-	C
II	PH 521 Electromagnetic Theory	4-0-0-4	C	C
	PH 522 Statistical Mechanics	4-0-0-4	C	C
	PH 523 Cond. Matter Physics	3-0-0-3	C	C
	PH 524 Atom. Mol. Physics	3-0-0-3	C	C
	PH 525P Electronics Lab. Pract.	0-0-5-3	C	C
	Elective	3-0-0-3	E	-
	PH 526 Research Project III	0-0-6-3	-	C
Summer Vacations	PH 527 Research Project IV	0-0-6-3	-	C
III	PH 611P Exp. Res. Techniques	0-0-7-4	C	C
	PH 614 Seminar and Report	0-0-4-2	C	C
	PH 613 Special Topics in QM	3-0-0-3	C	C
	PH 518P PG Project-I	0-0-6-3	C	-
	PH 615P Mini Thesis-I		-	C
	Elective	3-0-0-3	E	E
	Elective	3-0-0-3	E	E
IV	PH 621 Comput. Meth. For Physicist	2-0-4-4	C	C
	PH 519P PG Project-II	0-0-16-8	C	-
	PH 622 Mini Thesis -II	0-0-16-8	-	C
	Elective	3-0-0-3	E	E
	Elective	3-0-0-3	E	-
V-VI	Three Electives	3-0-0-3	-	E

Overall credit requirements

MSc: Total: 36 (Theory) + 10 (Lab) + 13 (Res) + 21 (Elect) = 80 Credits

I-PhD: Total: 36 (Theory) + 10 (Lab) + 25 (Res) + 9 (Elect) = 80 + 9 (Elect) = 89 Credits

Proposal for

Master of Technology in Communication and Signal Processing



**School of Computing and Electrical Engineering,
Indian Institute of Technology Mandi,
Himachal Pradesh, India.**

RS

1. Name of the Degree Program

Master of Technology in Communication and Signal Processing.

2. Abbreviation

Master of Technology is abbreviated as M.Tech

3. Duration

The duration of this program is two years. Each year consists of two semesters, summer and winter terms.

4. Credits to be earned

The students have to earn minimum of 70 and maximum of 72 credits for the degree of Master of Technology in Communication and Signal Processing. Credit distribution details are in Annexure 1.

5. Eligibility

- a) Candidates who have qualified for the award of Bachelor's degree in Engineering / Technology from a recognized University or Institute in Electrical/Electronics and Communication/Telecommunications Engineering (ECE), Telecommunications Engineering (T), Electrical & Electronics Engineering (EEE), Instrumentation (IN) with minimum 60% (CGPA 7.5), and who have qualified and have a valid score in Graduate Aptitude Test in Engineering (GATE) in ECE are eligible to apply for admission to the this program.
- b) For all B.Techs from IITs graduated with a CGPA of 8.0 or above, the requirement of GATE qualification is waived off.
- c) A student sponsored by a recognized R&D organization, academic institution, government organization or industry are eligible to apply for this program on a full-time basis. The Institute does not provide any assistantship to such students.
- d) A candidate with Associate Membership of Professional Bodies equivalent to B.Tech., as approved by the Senate and having valid GATE score in ECE shall also be eligible to apply for admission to this program with assistantship, subject to regulations approved by the Senate.

For more details on eligibility criteria please refer to ordinance and regulations for M.Tech./M.Sc. of IIT Mandi.

6. Categories of Admission

Candidates will be admitted to the M.Tech. program of the Institute under one of the following categories:

1. Regular full-time students with Half-teaching Research Assistantship (HTRA) assistantship
2. Full time sponsored students by the Industries, established Institutes/R&D Organizations/National laboratories without HTRA assistantship.

7. Selection

For admission to this M.Tech. program under regular category, the School shall adopt qualifying criteria based on GATE score, B.Tech percentage/CGPA and interview. GATE score will be used for shortlisting students for the interview. Sponsored category students with more than two years experience will be short listed for interview. Their selection is based on the interview performance and B.Tech percentage/CGPA.

8. Number of Seats

Total intake is 24. There will be seat reservation as per Institute norms.

9. Assistantship (Fellowship/Scholarship)

The award of assistantship shall be in accordance with prevailing norms of the Institute.

10. Award of Degree

Award of the M. Tech. degree shall be in accordance with the regulation of the Senate in relation to the requirements of the given program.

11. Academic Events

The dates of academic events scheduled during the academic session shall be specified in the academic calendar.

12. Campus Stay

Students admitted to these degree programs are required to stay in campus and to participate and complete all requirements of the program.

13. Exception

Any exception to above clauses will require approval of the Senate or by the Chairman, Senate.

Other details are in accordance with ordinance and regulations for M.Tech/M.Sc of IIT Mandi.



Annexure 1
Course and credit details

General details

1. Project is of one year duration
2. It is desirable that the projects are industry oriented.
3. Supervised research exposure in Winter of first year having 2 credits.
4. Project starts from the summer following first year and extends to third and fourth semesters. The summer part of the project carries 1 credit.
5. It is desirable that all courses have a practical component – either hardware or programming – irrespective of whether it is a 3 or 4 credit course. To clarify – it is desirable that the M.Tech students should do the practical part in a course open for M.Tech, B.Tech and Ph.D. students. The instructor has to take care of this.

Minimum credit requirements

	Credits
1. Discipline core	19
2. Discipline elective	12
3. SRE	2
4. Project	28
5. Open electives	8
6. Technical communication	1
Total	70

I year, Semester 1

Code	Subject	Credit	Remarks
CS 601	Probability and Random Processes	4-0-0-4	DC
EE XXX	Matrix Theory	2-1-0-3	DC
EE 503	Advanced Communication Theory	3-0-0-3	DC
EE 620	Advanced Digital Signal Processing	3-0-0-3	DC
	Elective 1	3/4	DE
	Technical Communication	1	
	Total credits	17/18	



I Year, Winter

EE XXX	Supervised research exposure	2
--------	------------------------------	---

I year, Second Semester

Code	Subject	Credit	Remarks
MA 651	Optimization	3-0-0-3	DC
EE XXX	Detection and Estimation Theory	3-0-0-3	DC
Elective	Elective 2	3	DE
Elective	Elective 3	3	DE
Elective	Open elective*	4	OE
Total credits		16+2 =18	

II Year, Third Semester

Code	Subject	Credit	Remarks
Elective	Elective 4	4	DE
Elective	Open elective*	4	OE
EE XXX	Project	10	
Total credits		18	

II Year, Fourth Semester

Code	Subject	Credit	Remarks
EE XXX	Project	18	
Total credits		18	

***The student may choose three open electives with 3 credits each.**

For Elective 1, Elective 2, Elective 3, and Elective 4, also, the student may choose either 3 credit or 4 credit electives such that the minimum requirement of 12 credits for DE is satisfied. The credits should be chosen such that the maximum credit in each semester does not exceed 22.

The list of courses follows:

Discipline Core

	Code	Course Name	L-T-P-C
1	CS601	Probability and Random Processes	4-0-0-4
2	EEXXX	Linear Algebra/Matrix Theory	3
3	MA 651	Optimization	3-0-0-3
4	EEXXX	Detection and Estimation Theory	3
5	EE503	Advanced Communication Theory	3-0-0-3

6	EE620	Advanced Digital Signal Processing	3-0-0-3
---	-------	------------------------------------	---------

Discipline Electives

	Code		
1	EE518	Information Theory and Coding	3-0-0-3
2	EE 517	Wireless Communication	3-0-0-3
3	EE XXX	Computer Networks	3
4	EE 621	Radiating Systems	3-1-0-4
5	EE XXX	Optical Communication	3
6	EE 608	Digital Image Processing	3-0-0-3
7	EE XXX	Statistical Signal Processing	3
8	CS 609	Speech Processing	3-0-2-4
9	EE 511	Computer Vision	3-1-0-4
10	CS 669	Pattern Recognition	3-1-0-4
11	EE XXX	IoT Systems	4
12	EE XXX	Creative Engineering Design	3
13	EE 509	Linear Dynamical Systems	3-0-0-3
14	CS 671	Deep Learning and Applications	3-0-1-4
15	EE 516	Biomedical Systems	3-0-0-3

Open Electives

Any graduate level course outside of the Communication and Signal Processing discipline from the School or from other Schools are acceptable as open electives.

Annexure-“D”

Program	Sanction strength by 2018	Revised strength	Increase in strength by Aug 2019
B. Tech CSE	58	60	2
B. Tech EE	55	80	25
B. Tech ME	47	80	33
B. Tech Civil	40	40	0
New B. Tech Program	0	30	30
M. Sc (Chemistry)	30	40	10
M.Sc Physics	24	34	10
M.Sc Applied mathematics	30	40	10
M.A	18	30	12
M. Tech SE	18	30	12
Increase in number of M.S and PhD students by projecting that 30 new faculty joined in different schools			70
Total increase in strength			214

Program	Sanctioned strength 2018	Revised strength	Aug 2019 Additional	2020 Additional	2021 (Additional)	2022 (Additional)	2023 (Additional)
B. Tech CSE	58	60	2	2	2	2	0
B. Tech EE	55	80	25	25	25	25	0
B. Tech ME	47	80	33	33	33	33	0
B. Tech Civil	40	40	0	0	0	0	0
New B. Tech Program	0	30	30	30	30	30	0
M. Sc (Chemistry)	30	40	10	10	0	0	0
M.Sc Physics	24	34	10	10	0	0	0
M.Sc Applied mathematics	30	40	10	10	0	0	0
M.A	18	30	12	12	0	0	0
M. Tech SE	18	30	12	12	0	0	0
M.S/PhD			70	70	70	70	70
Additional seats in the hostel			214	214	160	160	70

Hostel requirement

Year	2019	2020	2021	2022	2023
Additional capacity in hostel	214	214	160	160	160

1) The details of available dry/wet lab are as follows

Building,	Purpose	Quantity	Level
A10 (available)	Heavy equipment lab, A10.00.03	1	0
	Wet Lab: A10.00.04	1	0
	Dry Lab: A10.02.01, A10.02.02, A10.02.04	3	2
	Wet Lab: A10.03.01	1	3
A13 (available by April 2019)	Dry Lab: A13.03.06	1	3
	Dry Lab: A13.04.03 A13.04.04	2	4
A10-1a (available)	Class room A10-1A	1	1

2) Requirement of space to execute the lab courses from August 2019 onwards are as follows:

- February 2019: Communication lab and Control lab
- August 2019: PC lab, Chemistry lab, Electrical lab (IC160), Electronics lab(IC161), Workshop (Reverse engineering)
- February 2020: Physics lab
- Since the Workshop is located in south campus and is required for the following courses: Reverse engineering (moderate use), Design Practicum and Product realization, appropriate plans have to be prepared to shift in north campus
- Design I and Design II lab require ground floor

3) There is only one class rooms in A13 available to accommodate 200 students. Since the projected strength of batch 2019 is 260, the teaching of IC courses has to be done in multiple sessions which will need more instructors-hours..

4) All the lab (such as Electrical lab, electrical lab, Physics lab and Chemistry labs), which are used for IC courses should be able to accommodate at least 70-80 students in one sessions.

5) A10.02.02 and A10.02.04 for Communication and Control lab.

6) A13.03.06 be allotted for Chemistry lab

7) A13.04.03 and A13.04.04 for Electrical and Electronics Labs.

8) A10-1A for Physic lab

9) A Common Office : A10.03.16 (13.3 sqm)

