PDPM
INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, DESIGN AND MANUFACTURING JABALPUR

SENATE/2012-13 /2nd MEETING
To be held on December 20, 2012 at 10.30 am in Conference Hall of the Institute

AGENDA NOTES

Contents

Senate/2012-13/2.01	Overview Report of the Chairperson

To be presented in the meeting itself.

Senate/2012-13/2.02	Confirmation of minutes of the meeting (SENATE/2012-13 /1st meeting) held on September 08, 2012

Minutes of the meeting (SENATE/2012-13 /1st meeting) held on September 08, 2012 were circulated to the members and also attached as **SENATE/2012-13/2.02/Annexure I**. Some comments have been received on the minutes of the meeting and will be discussed during the meeting. It is requested to confirm the minutes after the discussion.

Senate/2012-13/2.03	Reports of UGCS, PGCS, SACS, SPACS, LCS and Counseling Services.

Reports of Under Graduate Committee of the Senate (UGCS), Post Graduate Committee of the Senate (PGCS), Student Advisory Committee of the Senate (SACS), Students Prize and Awards Committee of the Senate (SPACS), Library Committee of the Senate (LCS) and Counseling services will be presented by their respective convener/ Head during the meeting.

Senate/2012-13/2.04	Recommendations of names as possible Chief Guest for Convocation 2013 to be held in July 2013

Convocation 2013 is scheduled to be held in July 2013. Senate is requested to suggest possible names to be invited as Chief Guest for the occasion.

Senate/2012-13/2.05	Proposal of PhD in Natural Sciences (Physics and Mathematics)

It is proposed to start Ph.D program in Natural Sciences. A detailed proposal for the same is attached as **SENATE/2012-13/2.05/Annexure II**. Senate is requested to discuss and approve the same.

Senate/2012-13/2.06	Modification in Academic Calendar and Period of Examinations

Following modifications are proposed in the Academic Calendar:

1. At present, duration of mid-semester examination in a course is one hour which is not sufficient to have evaluation for the course covered till mid semester. It is proposed to increase the duration of each mid-sem exam to two hours instead of one hour.
2. Mid-semester examination is currently held in 3 days. With the increasing number and overlapping of courses, it is becoming difficult to arrange all mid-semester examination in duration of 3-days. It is proposed to increase the duration from 3 days to 6 days (i.e. Monday to Saturday).
3. Total duration of semester is proposed to be 18 weeks including mid-semester and end-semester examination, instead of existing 17 weeks. In last week of the semester two days (Wednesday and Thursday) will be kept for interaction with faculty/ lab examination/

project presentation. No formal classes/ extra classes/ rescheduled classes should be conducted in this period. Saturday and Sunday of this week will be given to the students for exam preparation. No academic activity will be held on these two days.

Senate is requested to deliberate on the proposed modification and approve the same.

Senate/2012-13/2.07	Modification in UG & PG Manuals

In the UG and PG manuals some of the points leads to ambiguity and need for further clarification. In order to make UG and PG manual more informative and clear, amendments are suggested by the UGCS and PGCS. Proposed amendments and modified UG and PG manual are attached as **SENATE/2012-13/2.07/Annexure III**. Senate is requested to deliberate on the same.

Senate/2012-13/2.08	Modification in D & M Proficiency Prizes

Following amendments are proposed in the existing SPACs manual:

1. Design and Manufacturing Proficiency Prizes is normally awarded for (i) the best B.Tech. project in the graduating BTech batch and (ii) the best thesis from among the graduating MTech./ MDes./ PhD students in each of the discipline.
   The prize is awarded in each discipline. Hence it is proposed to modify the name of the prize as "Proficiency Prizes". Criteria for award of the prize remain the same as:

   "4.5.1 Proficiency Prizes shall be silver medals to be awarded at the time of Institute's Convocation for (i) the best project in the graduating B Tech batch and (ii) the best thesis from the graduating M Tech/ MDes/ PhD students in each of the disciplines.
   4.5.2 Faculty of each discipline shall lay the minimum requirements for the award of Proficiency Prize and shall lay the criteria for short listing the applications received.
   4.5.3 In the event of a group being awarded the best project award, each graduating member of the team shall be awarded the prize.
   4.5.4 Proficiency Prizes shall be made out of 15 gm silver."

2. There is no time limit for submission of thesis by PG students, it becomes difficult for prize evaluation committees to give their recommendation within due time. Also, it becomes problem for the Institute authorities to prepare all medals/ certificates in time. In view of the same, it is proposed that students who submit their thesis by June 15 will only be considered for the award in that particular year.

Senate is requested to deliberate on the proposed amendments.

Senate/2012-13/2.09	Approval of new courses/ modified course contents

Course contents of new courses and modifications in the course contents of existing courses are proposed by the concerned faculty and are attached as **SENATE/2012-13/2.09/ Annexure IV**.

1. MN 201 Materials and Manufacturing Processes
2. ME 204 Manufacturing Technology
3. ME 306 Advanced Manufacturing Processes and Technologies
4. Visual Design Course to be run in EMF format

Senate is requested to approve the same.

Senate/2012-13/2.10	External mentors for PG students

Some of the PG students are visiting premier Institutes of India and abroad for their research work. These students are guided by the faculty of these premier Institutes. It is proposed that the grades submitted by their external mentors through internal supervisor may be considered as thesis grades in the running semester in which student was under supervision of external mentor.

Senate/2012-13/2.11	Ratification of the approval accorded by the Chairperson, Senate

From time to time different approvals are accorded by the Chairperson, Senate. Such approvals are listed in the table. Senate is requested to ratify the same.

S.No.	Date	Subject
1	23-06-12	Approval for permission to drop course 'ME 598: Seminar' for 6 students of M Tech
2	03-07-12	Approval for drop PBI of Mr. Hem Chand Meena (Roll No. 2009038)
3	09-07-12	Approval for modified course content ME 416: Vibrations of Mechanical Systems
4	11-07-12	Approval for UGCS and PGCS Committees of Senate
5	11-07-12	Approval for result of End Sem II, 2011-12: Mr. Sanjeev Kumar (2007047)
6	08-08-12	Permission for registration – Mr. B Muralidharan, Roll No. 1110361)
7	08-08-12	Permission for registration – Mr. K Vasu (Roll No. 1110367)
8	09-08-12	Approval for result of End Sem II, 2011-12: M Tech (ME) 2011 batch
9	20-08-12	Approval for result of B Tech 2008 batch (CSE,ECE & ME) : Summer term 2011-12
10	20-08-12	Approval for the award of M Tech Degree to seven students in Convocation 2012
11	20-08-12	Approval for the award of B Tech Degree to 132 students and M Tech Degree to 14 students in Convocation 2012
12	18-09-12	Approval for academic calendar for session 2013-14
13	09-10-12	Approval for course dropping – Ms. Shubhi Sharma, Roll No.

		1220109, M Tech (CSE)
14	23-10-12	Approval for change of course names and numbers (B Tech 2010 batch onwards)
15	27-10-12	Approval for Result of B Tech 2007 (CSE) – one student whose degree was withheld on disciplinary ground.
16	16-11-12	Approval for dropping of the EME "Em601d Parallel Processing" proposed in 2012-13, Semester I
17		Time to time for provisional degree for B.Tech./ M.Tech./ M.Des. students who have fulfilled the requirements (i) Mr. Abhinav Bhardwaj, Roll No. 1010201, M Tech (ECE) (ii) Mr. Manish Kumar Yadav, Roll No. 1010204, M.Tech (ECE) (iii)Mr. Apurba Chakraborty, Roll No. 1010202, M Tech (ECE) (iv)Ms. Nidhi Nigam, Roll No. 1010106, M Tech (CSE)

Senate/2012-13/2.12	**Any other item with the permission of the chair**

PDPM

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, DESIGN AND MANUFACTURING JABALPUR

Minutes of the SENATE/2012-13 /1st meeting
Held on September 08, 2012 from 11.00 am in Conference Hall of the Institute

Contents

SENATE/2012-13/1st meeting of the Senate was held on September 8, 2012 from 11.00 am in the conference hall of the Institute. Following members were present.

1. Prof. Aparajita Ojha
2. Prof. Puneet Tandon
3. Prof. Tanuja Sheorey
4. Prof. Vijay Kumar Gupta
5. Prof. P.N. Kondekar
6. Dr. Pritee Khanna
7. Dr. Atul Gupta
8. Dr. Prabin Kumar Padhy
9. Dr. Prashant Kumar Jain
10. Dr. Asish Kumar Kundu
11. Dr. Dinesh Kumar Vishvakarma
12. Dr. Prabir Mukhopadhyay
13. Dr. Asutosh Shrivastava (joined the meeting at 12.00 noon)
14. Dr. Lokendra Kumar Balyan
15. Dr. Pavan Kumar Kankar
16. Mr. Santosh Mahobia (Actg. Secretary)

Following members expressed their inability to attend the meeting due to their prior commitments.

1. Prof. V.K. Jain
2. Prof. V.M. Gadre
3. Prof. Uday Khedkar
4. Dr. Sunil Agrawal

Dr. M. Amarnath was absent from the meeting.

The Chairperson, Senate and the Dean, Academic welcomed all the members and the secretary of the newly constituted Senate. The Chairperson also apprised the new members about the procedures of the Senate and requested the Dean, Academic to proceed with the agenda items.

Senate/2012-13/1.01	Confirmation of minutes of the SENATE/2011-12/3rd Meeting of the SENATE held on June 18, 2012

No comments were received on the minutes of the meeting and therefore the minutes were confirmed. However, it was raised by one Senate members that the name of the awardee of Chairman's Gold Medal and Academic Proficiency Silver Medal (CSE) was to be changed later due to some errors. Accordingly,

name of Ms. Komal Dhawan in place of Anand Kumar Rai must be kept in the record along with the minutes of the SENATE/2011-12/3rd meeting in order to avoid any confusion in future. Hence, it was decided that the minutes would be prefixed by an amendment to the same effect giving the details of change in the names for Chairman's gold medal and Academic proficiency silver medal.

Senate/2012-13/1.02	SACs recommendation for withholding the degree of a student

The Dean, Academic informed the members that the Students Advisory Committee of the Senate (SACS) has recommended withholding the degree of a student for six months who was found guilty of submitting a false certificate of completion of degree in a company for a job. The Convener, SACS was requested to present the case. She informed the members about the following sequence of events –

(1) That she received a complaint from the Academic Office in July 2012 of submitting forged degree completion certificate by a student, when his degree requirements were not completed.

(2) That the said document was received by the Institute from a company on August 30, 2011 for verification of the student's record. On receipt of the document, a letter was sent to the student on September 03, 2011 to produce the original document certifying the degree completion requirement issued by the Institute. The letter was sent by speed post and was also received by the student on September 07, 2011 personally.

(3) The student did not respond to the letter and did not deny having the said false document.

(4) After this, a mail was sent on July 9, 2012 from the office of the Students' Affairs to the student on his Institute mail id to appear before the SACS. He was asked to inform within 7 days about his earliest availability failing which SACS would be submitting its recommendation. A letter to this effect was also sent by the Assistant Registrar to his father at his father's address.

(5) The student did not respond to even this mail.

(6) The SACS again met on July 18, 2012 to look into the case with reference to submission of forged document by the student as mentioned above. The members were unanimously of the opinion that the student be given an opportunity to put his points before the SACS. Accordingly, the Committee recommended withholding the degree until he appears before the SACS.

However, before the recommendations could be submitted to the Chairperson, Senate, the student called the Convener, SACS and told his willingness to appear before the SACS.

(7) Student appeared before the SACS on July 24, 2012 in the conference room of the Institute. The student confessed before the committee members that due to financial crisis and family circumstances, he was compelled to do a job and hence he forged the above said document. He also informed the members that he had not informed his father about the letter sent by Assistant Registrar. He confessed before the SACS that the copy of the letter sent to his father was held by him to hide the facts from his father.

(8) When asked to submit his confession in writing, he did not submit the same. Rather, he submitted a letter stating that he was serving in two different companies during the last year and nowhere had he submitted any false or forged document. Hence, the student turned hostile later.

(9) The SACS was unanimously of the opinion that student's father should not be kept in the dark and must be informed about the misdeed of the student. Accordingly, the father was contacted and he agreed to be present at the Institute on July 26, 2012.

(10) The SACS met again with his father on July 26, 2012 and after discussions recommended that the degree of the student be withheld for next six months with effect from August 11, 2012.

(11) She also informed the members about the following recommendations of the SACS–

a. The student claimed later that the Director had pardoned him for his misdeed. The SACS opined that if the student had any document showing that he was pardoned by the Director, the same may be produced by him. In that case, the recommendations of the SACS would be given accordingly.

b. That if the student actually has the original document with the original signature of Assistant Registrar (Academic), the case of forgery against him would be withdrawn (resolved).

At this point, some of the members informed the Senate that after the recommendations of the SACS, the student has been writing misguiding mails to the Convener-SACS with a copy to many public authorities including the Hon'ble HRM, The Chairman – BOG, Members of the parliament, District Magistrate and all members of SACS. The intent of all the mails has been to misguide the public authorities and defaming the SACS Convener, thus applying pressure tactics to

resolve the case in his favour. The Senate took a serious note of the same and opined that the case of misconduct with regard to writing emails with false allegations should be initiated against the student.

At this point, members were unanimously of the view that educational Institutes do not only grant degrees to students but are also responsible for educating them on moral values and ethics, so that the society is benefitted by the graduates having ethical and moral values. Accordingly, some members were of the view that the student should also be properly counseled during the period of withholding the degree for realizing the mistake that he had made so that he does not repeat the same in future, which would not only be harmful to him but also to the society at large.

Dean, Academic informed the members that similar views were also expressed by a member of the Senate through email that the student should be asked to perform some social service in the Institute or under the supervision of someone in the Institute and the degree should be awarded only after satisfactory completion of some suitably chosen social service activity.

The Chairperson Senate also informed the members that student had requested to appear before the Senate for putting his points. However, the Senate denied the student's request to be present before the Senate emphasizing the fact that SACS is a subcommittee of the Senate.

After long deliberations on the case, the Senate unanimously resolved the following:

(1) Withholding the recommendation for the award of B. Tech. degree to the student upto Semester I, 2012-13. That is, upto the end of Semester I in the month of December, 2012.

(2) A case of misconduct to be initiated against the student in SACS.

(3) Student should realize the misdeed done by him.

The Senate authorized the Chairperson, Senate to take a decision on behalf of the Senate in case the student appeals against the decision of the Senate.

Senate/2012-13/1.03	Absence of PG students from Institute without information

Three PG students were reported to be absent from the Institute without any prior information to the Institute and without seeking any leave from the Institute. The cases were discussed in the PGCS (Post Graduate Committee of the Senate)

meeting held on August 30, 2012 and recommendations of the PGCS were placed before the Senate.

Senate deliberated on each case in detail and took a serious note of casual approach of the students in seeking prior permission and leave to remain absent from the Institute in two cases and joining a company without taking prior permission by one student. Senate decided in each case separately that students would not be allowed to register in the current semester and the current semester would be treated as a semester drop. However, to complete their degree requirements, they will be required to register in the next semester (Semester II, 2012-13).

The PGCS had also recommended certain amendments in the Manual of Procedures and Guidelines for the Postgraduate Programmes in order to deal with cases in which a student does not complete residential degree requirements or other such requirements for submission of the thesis as partial fulfillment for the award of the Master's degree and to especially deal with the cases of absence of a student from the Institute without following proper procedure. Following amendments in the manual were approved.

(1) "If a student fails to submit his thesis within the stipulated time in the last semester of his programme, he/she will be permitted to submit his/her thesis within one month from the commencement of the next semester without registering in the next semester. In this case, he/she would be required to intimate to the Academic office that his/her thesis would be submitted within the extended period and his intimation should be duly forwarded by his thesis supervisor/guide. In case the student fails to submit the thesis in the extended period, he/she will be required to register only in the subsequent semester".

(2) A Doctoral Research Progress Committee (DRPC) will be constituted for each Ph.D. student (proposed by thesis supervisor) to monitor his/her progress throughout the programme. The committee will be approved by the Dean Academic. This committee will also evaluate the progress seminar of the student.

(3) All the Master's students will be grouped based on their broad area of research and a PG Progress Committee (PGPC) will be formed for each group (proposed by the discipline head) to monitor the progress of students throughout the programme. The committee will be approved by the Dean Academic. This committee will also evaluate the seminar(s) of the students.

Other amendments proposed by the PGCS were also deliberated. Senate suggested the PGCS to revise the document based on the discussions held. Therefore the decision on the approval of those amendments was deferred and the Chairperson, Senate was authorized to approve the amendments after the

suggestions of the Senate members are incorporated. It was also suggested to educate the PG students about the procedures and guidelines for the postgraduate programmes.

Senate/2012-13/1.04	Fixing of M.Tech. thesis submission deadline as May 31st each year

In order to streamline the process of award of degree to students of master's programme, it was proposed to fix the deadline of submission of the thesis as May 31st in each year in order to obtain the degree in the convocation of that year. The inputs received by one of the members through email were also placed before the Senate. Since, only the deadline for submission of the thesis was proposed, some members suggested fixing the date of defense also for getting the degree in the convocation of that year. Accordingly, after discussions, following was approved by the Senate.

(1) Last date of submission of thesis for award of degree in the year X, would be May 31, Year X.
(2) Last date for defense for award of degree in the year X, would be 10 days prior to the Convocation of year X (excluding the date of Convocation).
(3) If any of the above conditions is not satisfied, the student will not be eligible for award of degree in the convocation of the year X.
(4) However, after qualifying for the award of degree, he would be issued a provisional degree certificate, with the approval of the Chairperson, Senate and will be awarded degree in the next Convocation.

Senate/2012-13/1.05	List of experts as Senate nominees for selection committees of faculty positions

Some observations were made on the list by some members related to change of affiliations of the experts due to their movement from their original place to another place. Members were requested to give their recommendations for addition of a few more names within one week time. Senate authorized the Chairperson, Senate to add/delete experts from the list. Senate also authorized Chairperson, senate to approve further names if needed, from time to time.

Senate/2012-13/1.06	Co-opting of senate members for their specialized knowledge (not member of teaching staff) under provision 6.a.1(j)of MOA.

Under the provision 6.a.1 (j) of MOA the Senate co-opted the following experts in the category of non-teaching staff, for their specialized knowledge

(1) Mr. S. Amane, Tata Motors, Pune,
(2) Mr. Shobhan Choudhary, Indian Railways, New Delhi,
(3) Mr. Parag Vyas, CEO, GrauBar Design, Indore.

Senate/2012-13/1.07	Recommendation of Senate nominee(s) in Board

Under the provision 5.a.1(j) of MOA the Senate nominated the following professors for membership of the Board of Governors.

(1) Prof. Puneet Tandon, Dean (P&D) and Professor of Mechanical Engineering and Design.
(2) Prof. Tanuja Sheorey, Dean (S) and Professor of Mechanical Engineering.

Senate/2012-13/1.08	Any other item with the permission of the Chair

Senate/2012-13/1.08.01 –

One member of the Senate raised the requirement of counseling for faculty members. Same was approved in principle after deliberations for improving the academic performance of the faculty. The Senate advised the Institute administration to evolve a mechanism to work out the modalities.

Senate/2012-13/1.08.02 –

Mr. Mitesh Niranjan, a student of M.Tech. (ME) will complete his residential requirement for award of degree in the month of December, 2012. His thesis writing work is nearing completion. He has been offered a job by Mitsubishi Heavy Industry (MHI) Japan through the placement cell of the Institute under the Institute-Japan Collaboration programme. However, the company is asking him to join from October 1, 2012. Senate discussed the case and approved the proposal in principle to relax the minimum residential requirement as a special case, if the student submits the thesis. The Senate further suggested that the company be informed about the minimum residential requirement of his master's

programme and limitations of the Institute in allowing the student to complete his Master's thesis before the completion of residence requirement and be requested to extend the date of joining of the student to December 1, 2012. Based on the response of the company, the Chairperson, Senate was authorized to take a decision.

Senate/2012-13/1.08.03 –

Name of Dr. Atul Gupta was unanimously approved as Convener, Students Prizes and Awards Committee of the Senate (SPACS).

Meeting ended with a vote of thanks to the Chair and all present.

Forwarded for approval please,

Sd/-
Santosh Mahobia
(Secretary, Senate)

Approved

Sd/-
Aparajita Ojha,
Chairperson, Senate

Date: September 10, 2012

15

A Proposal for Ph.D in Natural Sciences (NS) IIITDM, Jabalpur

The need of interdisciplinary Ph. D programme is expanding the knowledge and applications overlapping different fields of experts. It is obvious learning process cannot be restricted to a limited space. The intellectual growth through liberal education would fulfill the desire of satisfaction qualitatively rather than quantitatively. Research and development is the key to future generation and prosperity of a nation through an academic Institution. Ph. D programme for Natural Sciences (NS) based on the philosophy to looks forward in developing a hub of interdisciplinary research environment. The source of basic science knowledge is the foundation of all other disciplines inventions as well as applications.

NS is an integral part of IIITDM Jabalpur since its inception. The fields of NS, already integrate various other disciplines of the Institute, such as Materials engineering, Nanomaterials, Biomedical Physics, Numerical Analysis & Scientific Computing, Wavelets, Random Networks, Image processing etc. moreover the applications of various science and technology based knowledge emerges out of NS. Having Ph. D programme as an integral part of the PG curriculum it would directly play an important role in growing research and development at IIITDM Jabalpur.

Therefore, NS proposes to introduce Ph. D programme in Physics and Mathematics. The programme envisages developing adequate facility in term of literature resources and laboratory to support the new programme.

Proposed Ph. D Programme: Discipline of Physics

Physics discipline faculty members (Dr. M K Roy, Dr. A K Kundu and Dr N R Jena) have agreed to start the Ph. D programme from August 2013 and discipline would focus in various fields of application in the field of science and technology. Some of these areas are Magnetic materials, Multiferroics, Nanomaterials for magnetism and other applications, Biomedical Physics. They have also decided that, if needed they will float one course each for the UG and Ph.D courses in each semester. In the current student strength (for core science courses), they strongly recommended for two more faculty members in Physics to run the Ph.D courses smoothly. According to their suggestions there must not be any fixed number of seats for admission in Ph.D programme, which will be decided by the faculty members.

Eligibility of the students:

1. Qualification & Experience: Master's degree in any area of Physical Sciences with 60% marks and qualified JRF/LS in one of the national level tests such as CSIR-UGC NET/GATE. Preference will be given to those with published research work in international journals.
2. For Ph.D programme the student must complete 4 courses (2 core course and 2 optional) in two semesters. The course distributions will be as follows, in first semester 1 core course and 1 optional course and for second semester 1 core and 1 optional course. In optional course student could select courses from other disciplines with the permission of research supervisor.

Following courses have been proposed by Physics faculty members in view of interdisciplinary course curriculum:

Proposed by AKK

Condensed Matter Physics-I **Prerequisites: NONE**

Crystal structure of solids, reciprocal lattice, X-ray and electron diffraction, different methods for structure determination. Crystal binding, cohesive energy. Lattice vibrations, Einstein and Debye models, phonons. Drude and Summerfeld models. Block theorem, Empty lattice and nearly free electron model, tight-binding model, Brillouin zone, Density of states and Fermi surfaces. Semiconductor crystals : intrinsic and extrinsic semiconductors , hole , effective mass , impurity band conduction , p-n junction , Shottky barrier, quantum Hall effect .

References

- N. Ashcroft and N.D. Mermin, Solid state physics
- C. Kittel, Introduction to solid state physics, 8th ed., John Wiley 2012.
- Crystallography for Solid State Physics: Verma and Srivastava
- J.R. Christman, Fundamentals of Solid State Physics.
- John Wiley 1988 Holf Finehart and Winston, 1972

Advanced Condensed Matter Physics-II **Prerequisites: CMP-I**

Plasmons, Polarons, Optical processes and excitons in solids, Dielectrics and ferroelectrics, Magnetism , dia- , para-magnetism , Curie-Weiss law , Van-Vleck and Pauli paramagnetism , ferro- , anti- and ferrimagnetism . Exchange interaction , spin wave , resonance absorption , dilute magnetic alloys , Superconductivity : phenomenology, type-I/II, GL theory and some ideas of microscopic origin. Quantum Tunneling effect, Spintronics and Magnetoresistance Materials (CMR, GMR, Spin Valve and TMR etc).

References

- N. Ashcroft and N.D. Mermin, Solid state physics
- C. Kittel, Introduction to solid state physics, 8th ed., John Wiley 2012.
- Colossal Magnetoresistance, Charge Ordering and related properties of manganese oxides: C. N. R. Rao, and B. Raveau (World Scientific: Singapore, 1998).

Nano Science and Technology **Prerequisites: CMP-I & II**

Introduction to Nanomaterials, Synthesis of Nanomaterials (Physical and Chemical methods) Metal Nano clusters. Characterization of Nano-materials (X-ray diffraction, Scanning Electron Microscopy, Tunneling Electron Microscopy, VSM, SQUID, Atomic Force Microscopy and Scanning tunneling microscopy). Preparation of Quantum Nanostructures, Size Effects, Conduction Electrons and Dimensionality, Properties of Nanostructured materials (Mechanical,

Physical, Chemical, Optical, Magnetic and Electrical properties). Effect of Density of States on properties. Nanostructure Multilayers.
Carbon based Nanomaterials: Nature of Carbon Clusters, Discovery of C60, Structure of C60 and its Crystal, Superconductivity in C60, Carbon Nanotubes: Synthesis, Structure, Electrical and Mechanical Properties. Graphene. Quantum -Wells, -Wires and -Dots.

Lab: Nanomaterials characterization techniques

References

- Introduction to Nanotechnology: Charles et al, Wiley Interscience
- Characterization techniques: D. K. Schroder.
- Handbook of Nanostructured Materials and Nanotechnology

Proposed by NRJ

Quantum Mechanics

Introduction to quantum theory, Basic quantum mechanics, Operators, Eigen functions and Eigen values, Postulates, measurement and interpretation of quantum mechanics, Schrodinger's equations and applications.
The variation Principle, Simultaneous linear equations, Linear variation functions, Atomic units, The Born-Oppenheimer approximation, Electron spin, The antisymmetry Principle.
Spin and spatial orbitals, Hartree products, Slater determinants, Hartree-Fock approximation, Self-consistent field theory.
Hartrec-Fock equations, Coulomb and exchange operators, Fock operator, Minimization of energy of a single determinant, Koopman's theorem, Hartree-Fock Hamiltonian, Roothan's equation, Polyatomic basis sets.

References:

(1) Introduction to Quantum mechanics by D.J. Griffiths.
(2) Quantum Mechanics by Bransden Joachain.
(3) Introductory Quantum mechanics by R.B. Liboff
(4) Quantum Chemistry by I.N. Levine.
(5) Modern Quantum Chemistry by A Szabo and N.S. Ostlund.

Computer Simulation Methods in Physics

Concepts of Theoretical Physics, Molecular properties: Equilibrium geometry, Total energy, Ionization potential, Electron affinity, Electron Probability density, Dipole moments, Atomic charges, Electrostatic potentials, Thermodynamical properties.

Density functional theory: Hoenberg-Kohn theorems, Kohn-Sham Theory, Exchange and correlation energy, Local density approximation, General gradient approximation, Hybrid density functional theory. Molecular properties by density functional theory.
Electron Correlation methods: Brief ideas on Moller-Plesset perturbation theory, Coupled cluster theory and Configuration integral Theory.
Molecular Mechanics: Force field, Bonded and non-bonded interactions, Solvent dielectric models, Energy minimization, Periodic and non-periodic boundary conditions, Constant temperature and pressure dynamics, Basic statistical mechanics.

References:

(1) Density-Functional Theory of Atoms and Molecules by R.G Parr and W. Yang.
(2) A Chemist's Guide to Density Functional Theory, W. Koch and M.C. Holthausen.
(3) Molecular Modeling: Principles and Applications by A.R. Leach.

Biomedical Physics

Thermodynamics of Biological systems, Basic ideas on structures and functions of nucleic acids, proteins and carbohydrates, Biomolecular forces, DNA-Protein interaction, protein folding, Mechanisms of enzyme action and regulation.
DNA & protein modifications by free radicals, oxidative stress & radiation. Disorders in DNA and Proteins, Mutatgenesis, Carcinogenesis and aging.
Chapter-3: Cancer initiation, promotion, & progression, Growth factors, growth factor receptors & signal transduction, Protein misfolding and aggregation, Neurodegenerative disorders, Alzheimer's disease, Parkinson's disease, Prion disease.
Enzymatic DNA repair, Chemical drug design by targeting protein-inhibitor binding, Biomaterials and applications, Molecular nanotechnology, Bio-nanomaterial & applications.

References:

(1) Lehninger Principles of Biochemistry by D. L. Nelson and M.M. Cox.
(2) Biochemistry by R.H. Garett, C.M. Grisham.
(3) The Molecular Biology of Cancer by M. Khan and S. Pelengaris.
(4) Basic medical Biochemistry by C. Smith, A.D. Marks, M Lieberman.

Proposed by MKR

Electrodynamics:

Problem-oriented review of electromagnetism: Coulomb law and electrostatics, Laplace and Poisson equations, uniqueness theorem, boundary-value problems, method of images, dielectrics, steady currents; and magnetostatics, time-varying fields. Maxwell's equations, electromagnetic waves, partial polarization, Lorentz force, Poynting theorem. gauge transformations and gauge

invariance, electromagnetic potentials, wave propagation in conductors and dielectrics, Lorentz theory of dispersion, complex refractive index.

Ref:
a) David J. Griffiths "Introduction to Electrodynamics"

Nanotechnology for Engineers:

Introduction to Nanostructured materials and Why nano world is different?

Properties of Nanostructured materials (or nano-materials) based on mechanical, physical, chemical, optical, magnetic and electrical properties

Synthesis/fabrication of nano materials (physical and Chemical). Characterization of Nano-materials (X-ray diffraction, Scanning Electron Microscopy, Tunneling Electron Microscopy, Vibrating sample magnetometer, SQUID, Atomic Force Microscopy and Scanning tunneling microscopy).

Idea about Carbon based nano-materials. Development in Plasmonics / Nano photonics and Spintronics (GMR, Spin Valve, and TMR). Current trends in nanoelectronics and Introduction to NEMS

Ref:
a) Charles P. Poole, Frank J. Owens, "Introduction to Nanotechnology", Wiley Interscience
b) Mark A. Ratner, Daniel Ratner, "Nanotechnology: A gentle introduction to the next Big Idea", Prentice Hall

Proposed Ph.D Programme: Discipline of Mathematics

All mathematics faculty members desire for introduction of Ph.D programme and are ready to share an additional load for floating pre Ph.D courses along with UG courses which are running at present.

As per PG manual mathematics discipline would also like to offer four pre Ph.D courses. We will offer two PG course in each semester out of which one will be core course and other one an elective. After successful completion of pre Ph.D courses a student will have to appear for a comprehensive examination. A three member committee (recommended by the supervisor and approved by Dean, Academic) will evaluate the student based on their oral presentation. If student performance is not satisfactory in comprehensive examination then he will face the same committee second time on or after 45 days and before 90 days. As once the student will get satisfactory grade then only he will be considered as a registered students.

At entry level, Discipline will assign a faculty advisor to each student to provide guidance. The students will decide their thesis supervisor(s) on or before the beginning of second semester.

Faculty of mathematics will give our best to train our Ph.D students for research as well as in teaching, therefore, we would like to involve them in tutorial classes of UG courses under the guidance of course instructor.

At present the strength of faculty member are less therefore discipline can offer Ph.D as per their expertise fields only which are as follows: 1. Numerical Analysis & Scientific Computing, 2. Differential equations, 3. Wavelets, 4. Applied Probability Theory, 5. Random Networks, 6. Image processing

In beginning of each semester, in view of the Ph.D students requirement and UG courses load, the faculty will decide that which courses are compulsory and which are elective. It will be a collective decision of all mathematics faculty members.

A probably list of courses which can be floated for Ph.D students are as per below.

1. Analysis
2. Differential equations
3. Scientific computing and Numerical methods
4. Wavelets and its Applications
5. Integral Transforms and Integral Equations
6. Introduction to Mathematical Statistics

The course contents of the above courses will be provided in due course of time.

Proposed Changes in the PG manual

Section	Original Text	Revised text
2.1.3	A minimum of 55 percent marks OR a CPI/CGPA of 5.5 (on the scale of 10.00) shall be required in the qualifying examination (B.Tech./B.Des./ M.Tech. or equivalent) as the *specified minimum* for admission in a postgraduate programme.	(i) A minimum of 60 percent marks OR a CPI/CGPA of 6.0 (on the scale of 10.00) shall be required in the qualifying examination (B.Tech./B.Des. or equivalent) as the *specified minimum* for admission in masters programme. (ii) A minimum of 60 percent marks OR a CPI/CGPA of 6.0 (on the scale of 10.00) shall be required at the undergraduate level i.e. B.Tech./ B.Des., etc and a minimum of 65 percent marks OR a CPI/CGPA of 6.5 (on the scale of 10.00) shall be required at the masters level qualifying examination (M.Tech./ M.Des./ M.Sc., etc.) as the *specified minimum* for admission in a Ph.D. programme. (iii) For admission to masters program under regular category qualifying marks/certificate in GATE/CEED/ (CSIR/UGC JRF/NET) or equivalent examination conducted at national level will be essential The candidate should have valid GATE /CEED /UGC JRF (iv) For admission to Ph.D. programme under regular category candidate must have obtained qualifying marks/certificate in GATE/CEED/ (CSIR/UGC JRF/NET) or equivalent examination conducted at national level at any time. (v) Relaxation for reserved category as per Govt. of India norms will apply as per section 2.1.4 of the manual
2.2.3	All admissions in different postgraduate programmes shall be recommended by the duly constituted selection committees. Such selection committees shall be appointed by the PGCS and approved by the Chairperson Senate	All admissions in different postgraduate programmes shall be recommended by the duly constituted selection committees. Such selection committees shall be recommended by the Discipline Head and approved by the Dean Academic
2.2.4	Admissions to different Master level programmes may be recommended solely on the basis of the performance in the qualifying examination (see 2.1.3) and GATE/CEED score of the candidate(s). In addition, a given Selection Committee may deem it fit to call some or all the candidates for the written test and/or interviews.	Admissions to different Master level programmes may be recommended solely on the basis of the performance in the qualifying examination (see 2.1.3) and valid GATE/CEED score of the candidate(s) from among the eligible candidates only having qualifying marks in GATE/CEED. Further, an additional requirement of written test and/or interview may be administered by the

		selection committees on the advice of PGCS. However, for admission to the categories other than the regular category, requirement of GATE/ CEED may be waived.
2.2.5	---	Admissions to doctoral programmes may be recommended on the basis of the performance in the qualifying examination (see 2.1.3) and performance in written test and interview for all categories.
2.2.11	In exceptional cases, a student admitted in the programme, who has paid his/her fee but is unable to register within the *late registration date* due to valid reasons, may request for the *deferred admission*. On the recommendation of the concerned faculty/discipline, the Chairman Senate may allow the deferment of admission for the duration not normally exceeding by one semester. However, all cases of *deferred admissions* shall be required to be ratified by the Senate and may stand cancelled otherwise.	In exceptional cases, a student admitted in the programme, who has paid his/her fee but is unable to register within the *late registration date* due to valid reasons, may request for the *deferred admission*. On the recommendation of the Convener, PGCS, the Chairman Senate may allow the deferment of admission for the duration not normally exceeding by one semester. However, all cases of *deferred admissions* shall be required to be ratified by the Senate and may stand cancelled otherwise.
3.1	Semester registration, as per Institute's academic calendar, shall solely be the responsibility of the student.	Semester registration, as per Institute's academic calendar, shall solely be the responsibility of the student. Allowing for late registration is a prerogative of the Institute.
3.5	For a student who has completed (i) all the experimental/computational work and (ii) the analysis related to his/her thesis work and (iii) is on authorized leave from the Institute, the PGCS may allow the submission of the thesis without his/her registration in the concerned semester.	deleted
3.5	--	Conversion from regular to external category: For a student who has completed (i) all the experimental/computational work and (ii) the analysis related to his/her thesis work and (iii) is on authorized leave from the Institute, the Chairperson, senate may allow conversion of category from regular to external category on recommendation of PGCS.
3.9	---	A student needs to preregister for the next semester on the dates specified failing which he will not be able to register in the next semester courses.
4.1.4	---	All selected Ph.D. students shall be assigned tentatively a Research Progress Committee (RPC) from the date of admission to monitor progress of the student throughout his Ph.D. programme. A Ph.D. student may opt to select a supervisor from the beginning of the Ph.D. programme on the recommendation of RPC. However, a Doctoral (Ph.D.) student may opt to find a supervisor at the end of the first semester, if he/ she so desires. RPC will monitor the progress of the student in such case(s).
4.1.5	If a student's supervisor proceeds on long leave,resigns/retires or otherwise ceases to be a	If a student's supervisor proceeds on long leave, resigns/retires or otherwise ceases to

	faculty member of the institute, the supervisor has the responsibility to appoint a co-supervisor or a supervisor in consultation with the student. Nevertheless, in such a case, the supervisor is required to inform the ConvenerPGCS. In this case the number of supervisors may be more than two if an external supervisor already exists. In this case the entire responsibility of the student lies with co-supervisor or the new supervisor, as the case may be.	be a faculty member of the institute, the supervisor has the responsibility to appoint a co-supervisor or a supervisor in consultation with the student. Nevertheless, in such a case, the supervisor is required to get approval from the Convener PGCS. In this case the number of supervisors may be more than two if an external supervisor already exists. In this case the entire responsibility of the student lies with co-supervisor or the new supervisor, as the case may be.
	---	In exceptional cases, a student may be permitted to change supervisor/ co-supervisor on recommendation of RPC after obtaining the consent of (i) the present supervisor/co-supervisor and (ii) the proposed supervisor/co-supervisor. In such case, if the research programme and/or area of work requires modification, the student's entire course programme requirement shall be examined by RPC and if needed student has to do course work as suggested by RPC. Final approval in such change will be given by the Dean Academic.
	---	(1) At any given time, the number of regular category Ph.D. students working with a supervisor shall not exceed four, while the total number of Ph.D. students working with him/ her shall not normally exceed six, including the students who are being co-supervised by the faculty member. (2) At any given time, the number of regular category Master's students working with a supervisor shall not exceed five, while the total number of Master's students working with him/ her shall not normally exceed six, including the students who are being co-supervised by the faculty member. (3) In exceptional circumstances, prior approval is required from the Chairperson, Senate with due recommendation giving justification by the Dean (Academic).

	MTech	**MDes**	**PhD [after MTech/ME]**	**PhD [after B Tech/BE]**
Minimum total number of credits	**66 (~~70~~)**	**68 (~~72~~)**	**74**	**104 (~~98~~)**

Minimum number of credits through the course work	**24**	**36**	**16**	**40**
Minimum number of credits through Graduate/Progress Seminar	**04**	**04**	**06**	**06**
Credits through Teaching Work*	~~**02**~~	~~**02**~~	**02 (~~04~~)**	**02 (~~04~~)**
Credits through Summer Internship	-	**02**	-	-
Minimum number of credits through thesis research	**28**	**16**	**32**	**32**
Minimum number of courses to be cleared	**06**[1]	**09**[1]	**04**[1]	**10**[1]
~~Minimum number of postgraduate courses to be cleared~~	~~**04**~~	~~**04**~~	~~**02**~~	~~**06**~~
~~Maximum number of undergraduate courses of Level 3 or above~~	~~**02**~~	~~**02**~~	~~**02**~~	~~**04**~~
Minimum courses from the discipline	**03**	**03**	**3**	**Nil**

[1]May include maximum two undergraduate course(s) with the permission of PGCS on the recommendation of discipline.

	4.2.7	For selecting the courses to be registered in a semester, the student shall be advised by his/her thesis supervisor/ registration advisor appointed by the PGCS.	For selecting the courses to be registered in a semester, the student shall be advised by his/her thesis supervisor. In case no supervisor is selected, RPC will help the student in courses to be registered.
	4.2.12	---	A student can register for Credit through teaching work only after successful completion of comprehensive examination.
	4.2.12	---	For credits through teaching work, student will be assigned a teaching assignment and a faculty mentor by the Head, of the Discipline. The teaching assignment will be evaluated by that faculty.
		The Institute encourages extra learning by auditing for additional number of courses. However, auditing of course(s) is permitted (a) only after a student has satisfactorily completed minimum credit of the course work, (b) the student has not exceeded the limit of undergraduate courses registered	The Institute encourages extra learning by auditing for additional number of courses. However, auditing of course(s) is permitted (a) only after a student has satisfactorily completed/ registered for minimum credit of the course work, (b) deleted

		for in his/her programme and a given course of his/her interest has been running in the institute.	
		The Comprehensive Examination Board of a Doctoral student shall consists of (i) At least three but not more than five faculty members from the discipline of the student including his/her supervisor (s) and (ii) One faculty member from a different discipline. In consultation with the thesis supervisor(s) the constitution of the Board shall be recommended by the Convener of the PGCS and shall require the approval of the Chairman, Senate. The thesis supervisor of the student shall be the Convener of the Comprehensive Examination Board.	The Comprehensive Examination Board of a Doctoral student shall consists of (i) At least three but not more than five faculty members from the discipline of the student including his/her supervisor (s) and (ii) One faculty member from a different discipline. In consultation with the thesis supervisor(s) the constitution of the Board shall be recommended by the discipline and shall require approval of Convener of the PGCS. The thesis supervisor of the student shall be the Convener of the Comprehensive Examination Board.
	4.11.1.1	After a student is formally admitted to the candidacy of Master's degree, the thesis supervisor(s)/ programme coordinator shall communicate a list of outside experts through the Convener PGCS for its approval by the Chairman Senate. The thesis will be sent to one of the recommended members as per the order of preference as decided by the Chairman Senate. To be globally competitive, it is expected that the thesis may be sent to the international experts in the field. The selected expert should be the part of the Thesis Defense Board. After an expert accepts thesis for evaluation, the thesis supervisor/ programme coordinator may request for the constitution of the Thesis Defense Board for the approval by Chairman Senate, at least three weeks in advance of the likely date of the Defense Examination.	After a student is formally admitted to the candidacy of Master's degree, the thesis supervisor(s)/ programme coordinator shall communicate a list of outside experts through the Convener PGCS for its approval by the Chairman Senate. The thesis will be sent to one of the recommended members as per the order of preference as decided by the Chairman Senate. The selected expert should be the part of the Thesis Defense Board. At the same time, thesis supervisor/ programme coordinator may request for the constitution of the Thesis Defense Board for the approval by Chairman Senate, at least three weeks in advance of the likely date of the Defense Examination
	4.11.1.4	In consultation with the members of the Board and the student, the thesis supervisor(s)/ programme coordinator shall announce the date of the thesis defense and intimate the Academic Section about the same at least two weeks before the scheduled date.	After receiving of acceptance of the thesis for defense from all members of the board, the thesis supervisor(s)/programme coordinator shall announce the date of the thesis defenseafter discussion with members of the board and intimate the Academic Section about the same at least one

			weeks before the scheduled date.
		--	It shall be the responsibility of the Convener, PGCS and the Academic Section that the name of the external member of the Thesis Evaluation Board is kept confidential till successful evaluation of the thesis of the candidate.
	4.11.1.10	After the thesis has been accepted, the student shall be required to submit a copy of the thesisalong with the abstract with a report from the thesis supervisor(s)/ programme coordinator authenticating that all the suggestions of the Thesis Defense Board have been incorporated in the revised copy.	After the thesis has been accepted, the student shall be required to submit a soft copy of the thesis to library along with the abstract and hard copy of the same along with a report from the thesis supervisor(s)/ programme coordinator authenticating that all the suggestions of the Thesis Defense Board have been incorporated in the revised copy.
	4.11.2.2	The proposal for the constitution of the Thesis Evaluation Board shall be proposed at the most 4 weeks before the submission of the thesis.	deleted
	5.1.3	---	Applications for leave of absence should be addressed to the Dean Academic and submitted to the Academic Section along with a medical certificate, if applicable. Leave usually must not be availed without prior approval of the Dean Academic. In addition, if a student is going out of campus on leave, she/he must inform the Hostel/Institute authorities. Failing this the Hostel/Institute authorities may initiate an action as seen appropriate by them.
	5.2.1	--	Postgraduate students are not entitled for Institute's vacation and mid---semester recess instead they can avail 15 days vacation leave with prior approval.
	5.3.2	If a student develops medical sickness while staying in the campus, the medical certificate is required to be obtained from the Medical Officer of the Institute. On the other hand, if he/she falls sick outside the campus while on sanctioned leave, the medical certificate must be obtained from a registered medical practitioner.	If a student develops medical sickness while staying in the campus, the medical certificate is required to be obtained from the Medical Officer of the Institute. On the other hand, if he/she falls sick outside the campus while on sanctioned leave, the medical certificate must be obtained from a registered medical practitioner. Same should be endorsed by the Institute Doctor.
	5.3.3	An absence due to Medical Leave exceeding 15 days shall entail financial loss.	An absence due to Medical Leave exceeding 15 days shall entail financial loss and reduction in academic load as per para 5.1.4.
	5.6.1	Postgraduate students may be permitted to proceed outside the Institute on Duty Leavefor carrying	Postgraduate students may be permitted to proceed outside the Institute on Duty Leave for carrying out field work, library

		out field work, library work, experimental work, laboratory work and for other research/academic work permitted by the PGCS.	work, experimental work, laboratory work and for other research/academic work permitted by the Dean academic on the recommendation of Supervisor and RPC.
		Postgraduate students may also be permitted to proceed outside the Institute on Duty Leaveto attend conferences, seminars, short courses, workshops etc.	Postgraduate students may also be permitted to proceed outside the Institute on Duty Leave to attend conferences, seminars, short courses, workshops etc for maximum of 15 days in a year
		Period for Duty Leave shall normally not exceed 30 days in a semester. However, in exceptional cases if the period of Duty Leave is required to exceed 30 days, permission would require a *prior* approval from the Chairman Senate.	Period for Duty Leave shall normally not exceed 30 days in a semester. However, in exceptional cases if the period of Duty Leave is required to exceed 30 days, permission would require a *prior* approval from the Chairman Senate. Duty leave cannot be combined with vacation leave.
		A student on Institute Assistantship is also reimbursed for a limited contingency expenses as per the approved terms and procedures to be notified from time to time.	Deleted
			8. DEGREE 8.1 A student is deemed to have completed the requirements for award of degree if she/he has a) met the residence and academic requirements outlined in Sections 4.12, b) satisfied additional requirements, if any, c) paid all dues to the Institute and the Halls of Residence, and d) no case of indiscipline is pending against her/him. 8.2 A student who completes all the graduation requirements specified in Section 8.1 is recommended by the Senate to the Board of Governors (BOG) for the award of the appropriate degree in the ensuing convocation. The degree can be awarded only after the BOG accords its approval. 8.3 Under extremely exceptional circumstances, where gross violation of the graduation requirements is detected at a later stage, the Senate may recommend to the Board of Governors withdrawal of a degree already awarded.

			9. AMENDMENTS Notwithstanding anything contained in this manual, the Senate of the PDPM-Indian Institute of Information Technology, Design & Manufacturing Jabalpur reserves the right to modify/amend without notice, the curricula, procedures, requirements, and rules pertaining to its postgraduate programmes.
4.9.4			End semester examination is mandatory and will cover the full syllabus of the course. The weightage for end semester examination should be between 30 to 50%.
4.9.5			Large departure from recommended mode for examination, needs prior approval from the Dean Academic.
4.9.6			Makeup for any absence from mid semester/ test/ quizzes will be at the discretion of the Instructor. Instructor needs to be convinced that the reasons for absence are genuine.
4.9.7			A student whose course is dropped due to poor attendance, will be marked 'X' grade in the grade sheet.

In UG manual:

A student can improve his/her grade (X, F, D, D+) after registering for the course. Grade improvement can only be done before the completion of his programme.

Note: Section numbers will be renumbered after inserting the approved changes.

Modification in the PG manual based on decisions taken in different Senate meetings:

Section	Reference of senate meeting	Original Text	Revised text
1,2 (modified)	Senate/2010-11/1st meeting held on 24-12-2010	1.2 Postgraduate students in the Institute are admitted under the following categories: (i) Regular, (ii) Sponsored As program stablizes and becomes mature, other categories like Self-sponsored, Externally Registered, Part-Time and Indian Nationals Residing Abroad [INRA] & Foreign Nationals, and Non-degree students may be considered in future after appropriate discussion in Senate.	.2 Postgraduate students in the Institute are admitted under the following categories: (i) Regular, (ii) Sponsored (iii) Externally Registered (for Ph.D. only) (iv) QIP (for Ph.D. only) Other categories of students may be considered in future after the approval of the Senate.
4.2.5	Senate/2010-11/1st meeting held on 24-12-2010	No student is allowed to register in a semester for credits < ~ 12	No student, except those registered under External Registration Programme is allowed to register in a semester for credits < ~ 12.
2.3.3 (new section)	Senate/2010-11/1st meeting held on 24-12-2010		**Students under External Registration Programme** 2.3.3.1 The Senate, on the recommendation of the Post Graduate Committee of the Senate (PGCS) shall approve a reputed R&D establishment / organization/ company associated with design and/or manufacturing of engineering products or an academic institute for the purpose of carrying out Doctoral research work in a specific area under the External Registration Programme. 2.3.3.2 Candidates who are on permanent role in an approved establishment/ organization/ company /institute and have

			served the organization for atleast two years shall be eligible to apply for admission under the category of External Registration Programme. Applications, however, shall be considered only if the candidate submits in writing that he shall work in the specified approved research area only. 2.3.3.3 A candidate working in an organization / establishment/company/ institute approved by the Senate will be considered for admission only if he is sponsored by his employer and the employer has given an undertaking to pay full salary to the candidate and relieve him to stay on the campus to enable the candidate to complete his residence requirement (till the completion of comprehensive examination). 2.3.3.4 Applicants for the External Registration Programme will be required to apply through the employer and must fulfill the requirements of the eligibility criterion, as per Clauses 2.1.1 or 2.1.2 and 2.1.3 as the case may be. 2.3.3.5 A candidate for the External Registration Programme will also be required to provide (a) Detailed information about the research facilities needed for the work that are available at his establishment / organization/ company/institute. (b) An undertaking

			from the concerned competent authority/employer that the same would be available to him for carrying out his research and (c) The acceptance and the bio-data of preferably more than one prospective supervisors who would supervise the candidate's Doctoral research work as a co-guide at his establishment/ organization/company/institute . 2.3.3.6 Students in the external registration programme will be required to stay in the campus atleast as long it takes to (a) complete the course work and pass the comprehensive examination and (b) get the approval of the Chairman, Senate on a written proposal (prepared in consultation with his supervisor and co-supervisor) outlining the work proposed to be done in his thesis. 2.3.3.7 Number of seats for admission under the External Registration Programme will not exceed 10% of the total seats for Ph.D. intake in each year, in each discipline and will be over and above the seats for Ph.D. intake under the regular category. **2.3.4 Students under QIP** 20% of the seats over and above the existing seats in each discipline can be filled by QIP candidates. Eligibility criteria for these candidates will be the same as laid down by central QIP admission committee.

			Normally, QIP Ph.D. Students are sponsored by the AICTE for first three years. During this period, they will be considered equivalent to Regular candidates and all the guidelines for regular candidates will be applicable to them. After the completion of three years their registration will be converted to that under External Registration Programme. **2.3.5 Students under Sponsored and Externally Registered category** Seats under the Sponsored category will be 10% of the seats over and above the regular category, in each discipline. In case there are not sufficient number of applications in one of the categories of externally registered / sponsored, the vacant seats may be interchanged between the two categories
1.8 (new section)	Senate/2011-12/3.08.2	---	**1.8 Residence**: The Institute is essentially a residential one and unless otherwise exempted/permitted, every student shall be required to reside in, and be a boarder of a Hall of residence, to which they are assigned. Married students may be permitted to stay outside the campus as special cases till the married PG accommodations are made available by the Institute.
3.10 (new section)	Senate/2011-12/3.08.2		Physical Reporting: It is mandatory for a student to report on the day of reporting at the beginning of the semester failing which his/her pre-registration will be

			automatically cancelled. If for some valid reason a student fails to report, he needs to re-register after paying re-registration fees. However, if a student seeks prior permission to report late on valid grounds, she/he may be allowed by Convener, UGCS without paying the re-registration fees. Re-registration can be done only on the date of late registration as mentioned in the academic calendar.
4.2.12 (new section)	Senate/2009-10/2.08		It is mandatory for all PG students to credit course on "Professional Communication Skills" of 2 credits. Students will get S or X in the course. Courses for Ph.D. students in other foreign languages such as Japanese, German or French, will be run as per the availability of foreign language teachers on audit basis.
4.9 (new section)	Senate/2009-10/1.13 held on February 20, 2010		**Examination/ Assessment** 4.9.1 The evaluation of the students in a course will be a continuous process and shall be based on their performance in end semester written examination (three hours duration), one mid semester written examination (one hour duration) and a minimum of two assessments in the form of quizzes/ short test/ assignments/ seminars/ course porjetcs. 4.9.2 Course based on EMF (Electives in Modular Form) shall be evaluated on the basis of marks obtained in the final examination and at least one of the assessments in the form of assignments/ quizzes/ tests/

			seminars. 4.9.3 The instructor will announce the modes of evaluation and distribution of weightage for each of the assessments at the beginning of the course at his/ her web page. 4.9.4 Every academic staff will maintain a course web page for each course that she/he is teaching in that semester. Course web page must have the following contents – (i) Course outline and contents, text and reference books (ii) Grading pattern/ assessment pattern including number of quizzes/ assessments / tests / projects and the weightage attached to each along with the weightage to mid semester and end semester examination (iii) lecture notes/ lecture slides/ links to the course text books reference books, if possible (iv) upload assignments/ project titles and details/ quizzes/ mid semester question paper/ end semester question paper as and when these are over and also examination papers of previous years, sample or practice problems. 4.9.5 At the end of the semester academic staff will submit a course file comprising of the course outline and contents, lecture schedule and questions papers/ assignments/ quizzes etc. to the office of

			the academic affairs.
4.10 (new section)	Senate/2009-10/2.10 held on July 10, 2010		A course of a student will be dropped if the student fails to secure a minimum 75% of attendance in the total classes/ labs held in that course. In special circumstances, a relaxation may be permitted to the student in attendance, up to 60% by the Chairperson, Senate on medical grounds. The medical certificate produced by the student must be endorsed by the Institute doctor. The course instructor will maintain the attendance record regularly and inform the students who fail to satisfy the criterion of 75% of attendance in each month through the course web page/ general (written) notice.
4.11 (new section)	Senate/2009-10/1.14		CPI will be multiplied by a factor of 10 (notionally) in order to obtain the equivalent numerical percentage.

PDPM INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, DESIGN & MANUFACTURING JABALPUR

PROPOSAL FOR MODIFIED COURSE CONTENTS
I. COURSE TITLE : MATERIALS & MANUFACTURING PROCESSES
II. PROPOSED COURSE NUMBER : MN 201
III. UNITS : 3–0–3–5
IV. SEMESTER : FIRST
V. BACHELOR OF TECHNOLOGY
VI. INSTRUCTOR(s) : Faculty from ME and NS discipline
VII. COURSE CONTENT:

The course is a first level course on materials and manufacturing processes and intends to give overall idea of materials and manufacturing processes only.

Course Contents (Materials):
Overview of Materials and their applications; Bonding in materials, Crystalline and Amorphous structures of solids, Miller indices in crystalline materials, Defects in crystalline materials, Single crystals and Poly-crystals.
Diffusion in solids; Phase Diagrams of engineering materials systems; Solidification; Diffusion-assisted and diffusion less solid-state phase transformations, Applications and Properties of Ceramic, Polymers and also of their Composite Materials. Band gap in solids, effective mass and electrical conduction in metals (KP model), Magnetic materials and their properties.

Course Contents (Manufacturing Processes):
Introduction: Introduction to Manufacturing, Historical Perspective, Importance, etc. Mechanical Properties in Design & Manufacturing.
CASTING: Fundamentals of Casting process, features of casting, Casting Processes, Classification, Significances.
METAL FORMING: Hot & Cold Working, Bulk Deformation Processes like Rolling, Forging, Extrusion and Drawing, Sheet Metal forming (Shearing & Drawing operations).
MACHINING: Machining, Mechanism of machining, Chip formation, Temperature, Tool Wear, Tool Life, Machining Processes, Brief introduction to Single Point and Multi-point Cutting Operations, Introduction to Grinding & Finishing
METAL JOINING: Fundamentals of Welding, Classification of welding processes, Introduction to Gas & Arc Welding, Ultrasonic Welding, Friction Welding, Resistance Welding, Brazing, Soldering, and Adhesive Bonding.
POLYMERS: Polymer products manufacturing, Extrusion, Injection molding, Blow Molding, Thermoforming, Compression Molding, and Transfer Molding.
MODERN MANUFACTURING PROCESSES: Introduction to Rapid Prototyping, classification and various RP processes; Introduction to various unconventional machining processes and their classification; Introduction to automation, Flexible Manufacturing Systems and CNC.
MANUFACTURING OF ELECTRONIC DEVICES: Manufacturing of Semiconductor Devices and Silicon Wafers, Device Fabrication Techniques, Surface Films Depositions, Lithography,

Etching, Process Integration and Packaging. Printed Circuit Boards and Techniques for micro / nano fabrication.

Text Books:

1. Serope Kalpakjian, Steven R Schmid, " Manufacturing Engineering and Technology", Pearson Education
2. Callister, "Materials Science and Engineering" John Wiley. & Sons Inc.

References:

1. Smith,William, "Foundations of Materials Science And Engineering", Mc Graw Hill, 4th edition.
2. V. Raghvan, "Materials Science and Engineering" 5th edition
3. Mikel P.Groover, "Fundamentals of Modern Manufacturing", John Wiley & Sons Inc.
4. John A Schey, " Introduction to Manufacturing Processes", Mc Graw Hill, 3rd edition

PDPM INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, DESIGN & MANUFACTURING JABALPUR

PROPOSAL FOR A COURSE

I. COURSE TITLE : MANUFACTURING TECHNOLOGY

II. COURSE NUMBER : ME204

III. UNITS : 3–0–1–4

IV. SEMESTER : IV

V. PROGRAMME B.Tech (CSE/ECE/ME) : MECHANICAL

VI. INSTRUCTOR(s) : ME Faculty

VII. COURSE CONTENT:

Machining and Mechanics of Metal Cutting (14):
Introduction to orthogonal & oblique cutting; chip formation mechanism; heat generation and cutting tool temperature, tool geometry - ASA, ORS, NRS and relationships, selection of tool angles. Cutting tool materials; tool wear, tool life and machinability; surface finish; cutting fluids. Merchant's circle diagram, coefficient of friction, stress, strain and strain rate, shear angle, Lee and Shaffer's Relationship; friction in metal cutting-sticking & sliding.

Material Removal Processes (08):
Basic operations of turning; shaping, slotting and planing; drilling and boring; milling; Introduction to multi-point cutting tools: twist drill, helical milling cutter. Practical machining operations with machining parameters, force magnitudes, power consumption, material removal rate, time per pass.

Cutting Force Measurement (02):
Basic Methods of measurement, axially loaded members, cantilever beam, rings and octagon, dynamometer requirements, machine tool dynamometers.

Economics of Machining (04):
Cutting parameters for minimum production cost criteria; maximum production and profit rate criterion. Restrictions on cutting conditions (power, speed, force and vibration, surface finish).

Metal Forming (10):
Plasticity: Introduction to stress, strain, stress-strain relationships, Mechanics of Forming Processes: Rolling, Forging, Drawing, Deep Drawing, Extrusion, Punching and Blanking.

Casting (04): Design of riser, runner and gating system; mechanism and analysis of solidification.

Text Books:

1. M.C. Shaw, Metal Cutting Principles, 2nd Edition, Oxford University Press, England, 2005
2. A.Ghosh and A.K.Mallik, Manufacturing Science, Affiliated East West Press, 1985.

Reference Book:

1. G.Boothroyd and W.A.Knight, Fundamentals of Machining and Machine Tools, Marcel Dekker, 1989.
2. HMT, Production Technology, Tata McGraw Hill, 1980.
3. J.Mcgeough, Advanced Methods of Machining, Chapman and Hall, 1988.
4. M.F.Spotts, Dimensioning and Tolerancing for Quality Productions, Prentice Hall, 1983

PDPM INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, DESIGN & MANUFACTURING JABALPUR

PROPOSAL FOR COURSE

I. COURSE TITLE : ADVANCED MANUFACTURING PROCESSES AND TECHNOLOGIES

II. PROPOSED COURSE NUMBER : ME 306

III. UNITS : 3–0–0–4

IV. SEMESTER : VI

V. PROGRAMME B.Tech (CSE/ECE/ME) : MECHANICAL

VI. INSTRUCTOR(s) :

VII. COURSE CONTENT:

Unconventional Machining Processes (20L): Electron Beam Machining (EBM), Plasma Arc Machining, (PAM), Laser Beam Machining (LBM), Abrasive Jet Machining (AJM), Water Jet Cutting (WJM), Ultrasonic Machining (USM), Electro-Chemical Machining (ECM), Electric Discharge Machining (EDM), Wire EDM.

Assembly (06): Jigs and fixtures, principles of location and clamping, synthesis of simple jigs and fixtures. Principles of assembly, engineering, theory of dimensional chains, fully interchangeable and selective assembly.

Metrology (04): Limits, fits and tolerance; Automated inspection and CMM; Selection of manufacturing processes for a given product.

High speed machining (02): Introduction and Concepts of HSM; Issues related to HSM; Comparison with conventional manufacturing processes

Finishing Processes (04): Introduction to finishing process, Grinding, Lapping, Honing, Super Finishing.

Precision Manufacturing Processes (02): Introduction to micro-fabrication processes and M4 processes; concept of accuracy, errors, influence of dimensional wear on accuracy.

Suggested Books/References:

1. Boothroyd, G and Knight, W A., Fundamentals of Machining and Machine Tools, 3rd Ed., Saint Luice Pr, 2005.
2. Black, S. C., Chiles, V., Lissaman, A. J., Martin, S. J., Principles of Engineering Manufacture, Arnold Edn, 1996.
3. Kalpakjian, S. and Schimd S. R., Manufacturing Engineering and Technology, Prentice Hall, 4th Edition, 2005.
4. G.F. Benedict, Nontraditional Manufacturing Processes, Marcel Dekker, Inc. New York, 1987.
5. V.K. Jain, Advanced Machining Processes, Allied Publishers, New Delhi, 2002.
6. A. Ghosh, and A.K. Mallik, Manufacturing Science, Affiliated East-West Press Ltd, New Delhi, 1985.
7. P.C. Pandey, and H.S. Shan, Modern Machining Processes, TMH Publishing Co. Ltd, New Delhi, 1980.
8. J.A. McGeough, Advance Methods of Machining, Chapman and Hall, London, 1988.

Visual Design Course to be run in EMF format

EMF 1 - Visual Order

Core Course

Design assignments in foundation courses are commonly criticized as adhering to a more artistic bent and at times completely lacking in a methodological and scientific approach. This issue continues to be debated and leads to dominance of one kind of thinking over another. Most of the time, this discourse is predominantly about which approach is more effective for modern graphic design education, rather than suggesting empirical methods to create newer paradigms of design teaching. In a pursuit to balance both the modes of thinking, (vertical + lateral), this course proposes a method towards criteria based visual design education. This means a course designed to achieve an objective (making it more comfortable for rational minds), as well as, at the same time extending the gamut towards freedom for explorations, in turn encouraging lateral thinking. This course in graphic design attempts to explain creation of visual order (hierarchy).

Visual Order in the context of visual relationships between elements that coexists within a two-dimensional space.

Objective of the course is to internalize an experience by creation of order. Order, a planned arrangement which facilitates perception of the desired message. When one meditates he himself experiences the meditation.

This experience of meditation can only be told to a third person with help of an analogy. If the experience has to be experienced, it can only be internalized by doing (i.e. Meditating). Therefore, to begin the process of learning an empirical experiment was formulated to understand visual design principles through creation of visual analogies.

Visual analogies were further mapped to the real world design task through initiated discussions/comparisons by the instructor. This empirical experiment has manifested into a course.

Objectives of the course:

- Purposeful arrangement of elements in a given space to send a visual message.
- Understanding the creation of order in visual messages.
- Making meaning and translating into picture=equivalent typographic messages (translations).
  To ensure the communication as a object-oriented description than a viewer-oriented description.
- Experiencing Scale, Value and Space relationships towards perceiving a whole.

Complementary objectives:

- To focus on the task rather than the tool (software).
- To learn image editing, publishing and documentation.
- To encourage working in a team and create discussions & debates.
- To encourage iterative process of designing by generating alternatives.

EMF 2 - Chunking theory

Semantics & Communication Theory

- The course explores relationship between human information processing and design of messages.
- Introduction to the Memory, (short term memory, Long term memory) chunking theory and their implications on human information processing. Human information processing strategies with emphasis on processing of visual information.

EMF 3 - Gestalt theory

- Introduction to visual perception and Gestalt laws of organization.
- Understanding and identifying laws, similarity, proximity, good continuation, symmetry, pragnaz and closure.
- Assignments exploring visual relationships with elements within a space.
- Visual Relationships to create and break groups and understanding its mapping with content.
- Identifying and using laws of organization through practical design tasks.

EMF 4 - Information Theory

- Introduction to information theory and their application to spatial and spatio-temporal message design.
- Concept of attention in perception. Relationship between message design and attention.
- Exploring relationships between the semantics and the structure messages.

Course is supported by studio which uses these theories in development of visual messages.

Recommended reading before the course begins:

My Road to Typography, Wolfgang Weingart, Basel, Lars Muller, 1989.
ISBN- 3-907044-86-X

Detail In Typography, Jost Hochuli, Hyphen Press (February 27, 2008)
ISBN-10: 090725934