

Guideline for Final Year B.E. Project & PMMS Activities

(Semester VII and VIII)



Gujarat Technological University

Nr.Vishwakarma Government Engineering College
Nr.Visat Three Roads, Visat - Gandhinagar Highway
Chandkheda, Ahmedabad – 382424 – Gujarat

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NOTE:

- ***INSTEAD OF GOING THROUGH FULL DOCUMENT AT ONCE, STUDENTS AND FACULTY/GUIDE/MENTOR/HOD/PRINCIPAL ARE ADVISED TO REFER SPECIFIC PAGES OF RELEVANT ACTIVITIES AT TIME, BEFORE THEY ARE ACTUALLY GOING TO PERFORM SAID ACTIVITY, SO AS TO UNDERSTAND ACTIVITIES AND THEIR OBJECTIVES WELL ENOUGH.***

- ***While every efforts has been made to ensure the correctness of the contents of this guideline, any error(s)/deviation(s) noted may be brought to the notice of Mr. Amitkumar Patel, Assistant Professor (IPR/Patent), at "ipr_projectofficer@gtu.edu.in" for corrective measures.***

1. Scope and Objectives of PMMS activities

Dear Students/Faculty/Guide/Mentor/HOD/Principal,

At Gujarat Technological University under visionary leadership of Vice-Chancellor, GTU Innovation Council (GIC) has been working on the development and further scaling up of Project Mentoring and Monitoring System (PMMS) development.

On the same platform, **interactive search facility** is now being provided so that you can search the bibliography of the project reports of the last three years from all GTU affiliated colleges. This will be useful to students for finding out the trends of projects been already carried out and the scope of next level innovative projects.

Objective of the PMMS:

1. To develop a system for helping the students to get appropriate help and mentoring and
2. To help them work more systematically on their project.
3. To help the students to remain in active contact with their team members, their Faculty Guide and industry-mentors (if any), HOD, principal as well as by university - on a real time basis The students in the team can update about their progress in project and guide can comment on their status, progress and problems. This will increase collaboration and co-creation while improving novelty of their work.

PMMS will be used for all projects being carried out by the students in all the BE colleges/institutes, affiliated with GTU.

PMMS is a platform which **covers multiple activities** being carried during final year of B.E. It covers activities such as student registration, team formation, Periodic Progress Report (PPR), Patent Search & Analysis Report (PSAR) generation activity, Design Engineering – Canvas activity, Business Model Canvas and its report upload, Patent Drafting Exercise (PDE), Final project report upload, Uploading the plagiarism search report, Completion Certificate generation.

Various functionalities have been generated on PMMS platform for catering the need of students, faculty, project guide, external mentor, HOD and Principal. And further more features will be keep on adding to make system more user friendly and result oriented.

PMMS is a user friendly and result oriented platform which helps students for multiple activities being carried out during the work on the final year project of B.E.

MENTOR MANAGENMENT: To the PMMS development has been made so that the students can obtain mentoring activities for their projects by various industry experts and R&D professionals, from anywhere in the world—in addition to the mentoring from their Faculty Guide. The platform with such interfaces has been generated to filter projects based on various technological fields as per interest and technical expertise of the mentor.

For any query or suggestions related to PMMS you may contact GTU at: s4@gtu.edu.in

Thanks and Regards

Team PMMS, GTU Innovation Council

2. Important Note

- Every final year BE student must have to register his/ her project, along with the details of the team members, Faculty Guide etc at earliest. Then as the semester progresses, every student is required to upload the Periodic Progress Reports and perform other activities regularly, related to the project.
- At the end of the semester, every student is required to upload the final project report and other necessary documents.
- After a student registers and after it is validated by the HOD, the user name and password will be sent by e-mail to the student, at the e-mail address, given by the student, while registering his/ her project.

3. Guidelines for BE Final year Project IDPs/UDPs - FAQs

IDP/UDPs/Research Projects in the curricula is to make sure that students do some innovative work, which can be related to the product/process within/outside the industry. Or the IDP/UDPs/Research Projects may be based on some unsolved problems of the society.

Notes:

1. Innovative work can be defined as attempting different things in different ways and making a difference.
2. A Final year student at GTU may work on one of the two types of projects, as a part of requirement for the Degree/Diploma. The two types are IDPs or UDPs.
3. Both IDPs and UDPs will follow similar procedures (protocols) and in both the cases the authenticity of the project is to be verified by the internal project guide.
4. The Project may be done at either the College or at the industry according to the inputs from the internal guide.

Industry Defined Project (IDP) is a project, which is designed to improve either a product or a process in either forms/features/functions based on a real life challenge from an industry. Dedicated hours have been allotted every week for all branches for interaction with industries and for working on the IDP/UDP. The term depicts that the projects is to be anchored upon an industrial use and it is to be done under the guidance of both an internal guide at college and an external mentor from industry. However whether definition is appropriate for a Final Year project is to be decided by the faculty only and its related issues will be binding to students group.

User Defined Projects (UDP) is a project based upon needs of a NGOs, informal sectors, Govt. organizations and society at large. Alternatively the UDP can be on a research problem identified by faculty, or it could be idea of student himself.

Guides: A faculty from educational Institution of the student will be guide for project. The industry persons or any other experts can mentor the projects. (For some projects, multiple guides can be taken.)

During final project examinations, projects are evaluated by a group of two examiners consisting of an internal examiner and external examiner appointed by the University. However for a project, based on an IDP, Principal/Director of the educational institution should invite Industry mentor/guide to join group of examiners for evaluation of the project, as the 3rd examiner.

FAQs related to IDP/UDP

- The final year project is divided into two semesters (7th & 8th)
Note: For IT projects, if a student is able to complete the project work during first semester, he/she may apply to HOD for permission to take an additional project during the second semester. (The guides/HOD/students have to check progress and in suitable cases only a new project is to be allowed with a record keeping at corresponding department)
- Generally, students are expected to complete one third of total work expected from Project Definition, during the 7th Semester. The remaining two third work will have to be completed before end of 8th Semester. However if Project Definition given at 7th Semester, requires less work to be done, then a new definition, requiring proportionate work corresponding to time and credits allotted at 8th Semester, will be given to students, during start of 8th Semester.
- A student may take either IDP or UDP. However proposal for final year project will have to be submitted in required format.
- Kho-Kho model (relay) of projects can be allowed where a semi-finished project done by the previous year's students, at a particular department, can be adopted by students of next year.
- The number of students per group for a project has to be decided by college/department/project guides. (In specific cases guides may allow inter college projects after mutual consent of both the Principals.) Team size should always depend on size of the projects and required man-hours to implement the defined work.
- Any student can go to any industry in or outside his sankul for defining the IDPs. (25 GTU Innovation sankuls have been established across the State).
- The students can take inter-disciplinary projects during final year after consultation with the guide in his/her department.
- The final year students may seek the help of Coordinator of the Udisha Club/ Departmental Coordinators for assignment to an appropriate industry or any help while doing the IDPs/UDPs.
- The Principal/Director of the colleges are required to coordinate with Sankul Co-Chairman (Academic) and Sankul Co-Chairman (Industry) and build relationships with industries.
- The students have to mention the name of the industry/source of the industry defined project while submitting the project definition immediately after commencement of the academic session during the first semester of the Final Year.
- Those students who have already undergone the training or industrial visit can define a project definition from the respective industries, based on the training or industrial visit.
- Where ever feasible students have to demonstrate a proof of prototypes/working model during the final examinations. Each team has to keep all their progress documented while working on the project.

4. Guidelines as Suggested by the Council of Deans

The students are supposed to scout for IDP/ UDPs before commencement of first semester of the final academic year. The student will take review inputs from faculty member, who is/are to be his/her/their Guide for the project and submit/present a presentation in power-point and document, in the format of (<http://gtu.ac.in/udishapdf/IDPIndustryDefinedProject.pdf>) . (In case of a UDP, students have to fill user's detail in place of details related to industry) within one month of commencement of semester. (Team/individual will submit a report on the problem/project to the HOD. The IDP/UDP is mandatory for all branches.)

1. Each team has to present their IDPs/UDPs/Projects in front of their whole class and all faculty members of corresponding branch within one month of commencement of semester. Then, till the end of semester, students group will have to work on actual project tasks. Once again the student group will be regularly visiting industry/meeting faculty guides as per time allotted in the time table, and will submit biweekly (as per college) progress reports to guides/mentors/industries/college.
2. Colleges may invite other experts including industry persons; Sankul Co-Chairs /Directors of Sankul/faculties during these presentations. All the presentations have to be stored and maintained by respective colleges and departments. IDP/UDP reports of all the branches of the college are required to be uploaded on GTU PMMS portal, and same has to be verified by respective guide/HOD/Principal.
3. If the guides/HODs find during the presentation that the IDPs/UDPs are not suitable or is a repetition (done exactly the same thing in same manner before) or having not sufficient authentication about the industry who has provided the projects/problems, the teams may be asked to resubmit new definitions/value added definitions within 15 days. (The weightage is to be given based on the innovativeness of concept, originality of the concept and the usefulness of project)
4. If IDP is not of the required level, students may be asked to work on a UDP, defined by a faculty member.
5. Each team has to present (in report) their literature survey/prior art survey/ Patent Search & Analysis Reports (PSAR) of their ideas while presenting their IDPs/UDPs. If they are adding value to any existing product or process they might suggest the frugality/cost benefit or benefits to any common user or to any SMEs (Small and Medium Enterprises) through their IDPs/UDPs.
6. The teams have to be evaluated based on the credits as decided by university.
7. The internal evaluation of the IDPs/UDPs during 7th and 8th semester is to be done through continuous evaluation process at each department of respective colleges to gauge the efforts of students. The teams are supposed to keep their industries/users informed about their progress. The continuous evaluation/presentation is to be done once in a month/bimonthly as decided by the colleges. Departments may invite industry mentors to presentations the opinion of industry mentors may be taken into account by internal guide for internal evaluation.
8. The industry guides/any other experts, who have helped in IDP/UDP may be invited to address students about the innovations adopted/needed by them during these presentations or in given time frame in the academic calendar for project.
9. While submitting the IDPs/UDPs as individual or as an individual/team has to submit a self-declaration form in the given format about the authenticity of the IDP/UDP to

ensure that the innovation/project/IDP/UDP is being developed with the help of their guides (external/internal). **The Head of Department and internal guide must not accept ready solution, prepared by a third party and presented by a student/team of students.** In such scenarios the internal guide/Head of Department may cancel the project, at any stage, if proper justification cannot be produced. (A record of such scenarios is to be maintained at the department for reference of GTU)

10. The hard copies of the IDP/UDPs forms with self-declaration form (signed) is to be kept as record of the corresponding department of the corresponding colleges. (The soft copies is to be submitted to GTU according to the given format online after presentations/evaluation as part of final project report)
11. All student teams are must require to register and complete all tasks on PMMS portal during both semester, the same has to be properly reviewed by respective guide/HOD/Principal. After which all students are must require to generate completion certificate and same has to be attached with their project report along with signature from their guide and respective HOD.
12. For Industrial Shodh Yatras (ISYs) Steps & Final Year Projects follow the steps as mentioned under Annexure 2 of this guideline document.

The detailed format for industry defined project scouting is posted in subsequent pages of this guideline. The students will also have to submit the problem/project definition to the concerned college and university through PMMS portal. The problem definition should have content as per the given guidelines including details of previous attempts to solve such problems/projects and the proposed ways to solve the problem/process by the concerned student or the team of students.

5. SELF-DECLARATION (by Student/students) of each IDP/UDP

SELF-DECLARATION (by Student/students) of each IDP/UDP

(This has to be attached along with IDP/UDP report, while submitting the copy to university through PMMS portal and to departments in hard copy)

SELF - DECLARATION (by Student/students)

I/we

(Name of student/students), the student _____ of **Branch**, having **enrolment number** _____ enrolled at _____ **(college name)** hereby certify and declare the following:

1. I/we have defined my/our project based on inputs at _____ (users name/industry/any other user like faculty or any other organizations) and each of us will make significant efforts to make attempt to solve the challenges. I/we will attempt the project work at my college or at any location under the direct and consistent monitoring of _____ (guides name/industry/user). We will adopt all ethical practices to share credit amongst all the contributors based on their contributions during the project work.
2. I /we have not purchased the solutions developed by any 3rd party directly and the efforts are made by me/we under the guidance of guides.
3. The project work is not copied from any previously done projects directly. (Same project can be done in different ways but if it has been done in same manner before then it may not be accepted)
4. _____ (Name of industry/user/self) to the best of my knowledge is a genuine industry engaged in the professional service/social organizations.
5. We understand and accept that he above declaration if found to be untrue, it can result in punishment/cancellation of project definition to me/we including failure in the subject of project work.

Name/Names:

Contact number/numbers:

Date:

Sign:/signs

Place:

6. List of PMMS Tasks for Semester 7 & 8

The online platform: <http://projects.gtu.ac.in/> helps cater to the different needs of the students and colleges. During semester 7 and 8, following tasks will have to be carried out by students using the PMMS platform only:

PMMS Tasks for Semester 7 & 8:

Semester 7	Semester 8
1. Student registration	1. Student movement to semester 8
2. Team formation	2. Team formation
3. Periodic Progress Report (PPR)	3. Periodic Progress Report (PPR)
4. Patent Search & Analysis Report (PSAR) generation activity	4. Business Model Canvas (BMC) and its report upload
5. Design Engineering – Canvas activity	5. Patent Drafting Exercise (PDE)
6. Final project report upload.	6. Final project report upload.
7. Uploading the plagiarism search report	7. Uploading of the plagiarism search report
8. Completion Certificate generation	8. Completion Certificate generation
9. Feedback Form	9. Feedback Form

Details about all above activities is described in detail, in the following pages of this document.

For common activities (which will be carried out during both semesters) such as Periodic Progress Reports (PPR) etc, the common details as described in subsequent pages will be applicable during both semesters.

For all the above activities, each student has to register with his details at <http://projects.gtu.ac.in/> . After the approval from respective HOD/Principal students will get password via email to work on the PMMS portal.

PMMS activity matrix for semester 7 and 8:

Activity	For Semester 7 or 8	Team activity or Individual Activity
Student registration	Only Semester 7	Individual student activity
Team formation	Both Semesters	Team activity
Periodic Progress Report (PPR)	Both Semesters	Individual student activity
Design Engineering – Canvas activity	Only Semester 7	Team activity
Patent Search & Analysis Report (PSAR) generation activity	Only Semester 7	Individual student activity
Final project report upload.	Both Semesters	Team activity
Uploading the plagiarism search report	Both Semesters	Team activity
Completion Certificate generation	Both Semesters	Individual student activity
Student Movement from Semester 7 to Semester 8	Only Semester 8	Individual student activity
Business Model Canvas (BMC) and its report upload	Only Semester 8	Team activity
Patent Drafting Exercise (PDE)	Only Semester 8	Team activity

It is very important to understand the OBJECTIVE of all activities (mentioned at following pages in this document) prior to doing it.

7. List of PMMS User Manual for Various User Categories

Detailed user manual comprising all stages and steps of the PMMS portal, for all user categories is available at said links:

User Category	Web link for the User Manual
Student	http://projects.gtu.ac.in/UserManual/UserManualforStudent.pdf
Internal Guide/ Faculty	http://projects.gtu.ac.in/UserManual/UserManualforInternalGuide.pdf
External Guide	http://projects.gtu.ac.in/UserManual/UserManualforExternalGuide.pdf
Mentor	http://projects.gtu.ac.in/UserManual/UserManualforMentor.pdf
HOD	http://projects.gtu.ac.in/UserManual/UserManualforHOD.pdf
Principal	http://projects.gtu.ac.in/UserManual/UserManualforPrincipal.pdf

8. Zone wise timeline of PMMS activities for B.E Semester 7

To manage the student's traffic on PMMS website and server, as well for smoothly running of project PMMS activities, GTU has defined a strategy to divide the zone wise colleges in two broad groups. And alternately server will remain open for **students** of respective zone.

The group division is as below:

Group	Included Zones
Group 1	Zone 1 & 2 (53 Colleges)
Group 2	Zone 3, 4 & 5 (71 Colleges)

* List of colleges under each zone is mentioned on next pages.

* These are tentative days, and may differ based on real situation. Real situation will be mentioned/publish on PMMS portal.

The time period for various tasks (time window) for said activity of defined groups are as below:

Sr. No.	Task	Zone 1 & 2	Zone 3, 4 & 5
1	Student Registration & Team Formation	21 days starting from semester start	
2	First- Periodic Progress Report (PPR)		
3	Design Engineering Canvas (DEC) and its report upload	Next 5 days	Next 5 days
4	Second - Periodic Progress Report (PPR)	Next 5 days	Next 5 days
5	Patent Search Analysis Report (PSAR)	Next 5 days	Next 5 days
6	Third - Periodic Progress Report (PPR)	Next 5 days	Next 5 days
7	Forth - Periodic Progress Report (PPR)	Next 7 Days	Next 7 days
8	Final project report upload	Next 4 days	Next 4 days
9	Uploading of the plagiarism search report	Next 3 days	Next 3 days
10	Completion Certificate generation	Next 5 days	Next 5 days

Note:

- This will be applicable only to students.
- For internal guide, HOD, Principal, External Guide and Mentor site will remain open for **ALL DAYS, without any restrictions.**

9. Zone wise timeline of PMMS activities for B.E Semester 8

To manage the student's traffic on PMMS website and server, as well for smoothly running of project PMMS activities, GTU has defined a strategy to divide the zone wise colleges in two broad groups. And alternately server will remain open for **students** of respective zone.

The group division is as below:

Group	Included Zones
Group 1	Zone 1 & 2 (53 Colleges)
Group 2	Zone 3, 4 & 5 (71 Colleges)

* List of colleges under each zone is mentioned on next pages.

* These are tentative days, and may differ based on real situation. Real situation will be mentioned/publish on PMMS portal.

The time period for various tasks (time window) for said activity of defined groups are as below:

Sr.No.	Task	Zone 1 & 2	Zone 3, 4 & 5
1	Student movement to semester 8 & Team Formation	21 days starting from semester start	
2	First- Periodic Progress Report (PPR)		
3	Business Model Canvas (BMC) and its report upload	Next 5 days	Next 5 days
4	Second - Periodic Progress Report (PPR)	Next 5 days	Next 5 days
5	Patent Drafting Exercise (PDE)	Next 5 days	Next 5 days
6	Third - Periodic Progress Report (PPR)	Next 5 days	Next 5 days
7	Forth - Periodic Progress Report (PPR)	Next 7 Days	Next 7 Days
8	Final project report upload.	Next 4 days	Next 4 days
9	Uploading of the plagiarism search report	Next 3 days	Next 3 days
10	Completion Certificate generation	Next 5 days	Next 5 days

Note:

- This will be applicable only to students.
- For internal guide, HOD, Principal, External Guide and Mentor site will remain open for **ALL DAYS, without any restrictions.**

10. List of zone wise colleges

(Colleges are as below in the alphabetic order of college name)

Zone	Inst. Code	Institute Name
3	001	A. D. PATEL INSTITUTE OF TECHNOLOGY, KARAMSAD
4	122	AARYA-VEER COLLEGE OF ENGINEERING & TECHNOLOGY, RAJKOT
1	131	Adani Institute of Infrastructure Engineering
1	120	ADITYA SILVER OAK INSTITUTE OF TECHNOLOGY, AHMEDABAD
1	002	AHMEDABAD INSTITUTE OF TECHNOLOGY, GOTA, AHMEDABAD
2	051	ALPHA COLLEGE OF ENGINEERING & TECHNOLOGY, KHATRAJ, KALOL
1	108	AMIRAJ COLLEGE OF ENGINEERING & TECHNOLOGY
1	128	APOLLO INSTITUTE OF ENGINEERING
1	121	APOLLO INSTITUTE OF ENGINEERING & TECHNOLOGY, AHMEDABAD
3	127	Arc Institute Of Technology
4	092	ARHAM VEERAYATAN INSTITUTE OF ENGINEERING, TECHNOLOGY & RESEARCH
2	093	ARRDEKTA INSTITUTE OF TECHNOLOGY, RADHIWAD, KHEDBRAHMA
4	096	ARUN MUCHHALA ENGINEERING COLLEGE, DHARI, DIST: AMRELI
4	003	ATMIYA INSTITUTE OF TECHNOLOGY & SCIENCE, RAJKOT
4	004	B. H. GARDI COLLEGE OF ENGINEERING & TECHNOLOGY, RAJKOT
3	005	BABARIA INSTITUTE OF TECHNOLOGY, VARNAMA
4	109	BALAJI ENGINEERING COLLEGE
5	006	BHAGWAN MAHAVIR COLLEGE OF ENGINEERING & TECHNOLOGY, SURAT
3	007	BIRLA VISHVAKARMA MAHAVIDYALAYA, VALLABH VIDYANAGAR
3	008	BIRLA VISHVAKARMA MAHAVIDYALAYA, VALLABH VIDYANAGAR
5	009	C. K. PITHAWALLA COLLEGE OF ENGINEERING & TECHNOLOGY, SURAT
1	044	C. U. SHAH COLLEGE OF ENGINEERING & TECHNOLOGY, WADHWAN
1	052	CENTRAL INSTITUTE OF PLASTICS ENGINEERING & TECHNOLOGY, VATVA, AHMEDABAD
3	010	CHAROTAR INSTITUTE OF TECHNOLOGY, CHANGA
5	053	CHHOTUBHAI GOPALBHAI PATEL INSTITUTE OF TECHNOLOGY, TARSADI, BARDOLI
1	118	D.A. DEGREE ENGINEERING & TECHNOLOGY
4	054	DARSHAN INSTITUTE OF ENGINEERING & TECHNOLOGY, RAJKOT-MORBI HIGHWAY, HADALA
3	082	DR. JIVRAJ MEHTA INSTITUTE OF TECHNOLOGY, MOGAR, ANAND
4	083	DR. SUBHASH TECHNICAL CAMPUS - JUNAGADH
3	055	ENGINEERING COLLEGE, TUWA, GODHARA
5	084	FACULTY OF ENGINEERING, TECHNOLOGY AND RESEARCH. BARDOLI, SURAT
2	056	FACULTY OF ENGINEERING, GROW MORE FOUNDATION GROUP OF INSTITUTIONS,BERNA, HIMMATNAGAR
2	058	FACULTY OF ENGINEERING, SHREE SARASWATI EDU. SANSTHAN GROUP OF INSTITUTIONS,RAJPUR, KADI
3	011	G. H. PATEL COLLEGE OF ENGINEERING & TECHNOLOGY, V V NAGAR
4	059	G. K. BHARAD INSTITUTE OF ENGINEERING, KASTURBA DHAM, RAJKOT
2	012	GANDHINAGAR INSTITUTE OF TECHNOLOGY, GANDHINAGAR
5	110	GIDC DEGREE ENGINEERING COLLEGE, NAVSARI
5	014	GOVERNMENT ENGINEERING COLLEGE, BHARUCH
1	021	GOVERNMENT ENGINEERING COLLEGE, BHAVNAGAR
4	015	GOVERNMENT ENGINEERING COLLEGE, BHUJ
3	018	GOVERNMENT ENGINEERING COLLEGE, DAHOD

GTU INNOVATION COUNCIL (GIC)

Zone	Inst. Code	Institute Name
3	060	GOVERNMENT ENGINEERING COLLEGE, GODHARA
2	016	GOVERNMENT ENGINEERING COLLEGE, MODASA
2	061	GOVERNMENT ENGINEERING COLLEGE, PALANPUR
4	020	GOVERNMENT ENGINEERING COLLEGE, RAJKOT
2	013	GOVERNMENT ENGINEERING COLLEGE, SECTOR - 28, GANDHINAGAR
5	023	GOVERNMENT ENGINEERING COLLEGE, SURAT
5	019	GOVERNMENT ENGINEERING COLLEGE, VALSAD
2	022	GOVERNMENT ENGINEERING COLLEGE, AT. KATPUR, PATAN
2	062	GUJARAT INSTITUTE OF TECHNICAL STUDIES, MOYAD, PRANTIJ
2	104	GUJARAT POWER ENGINEERING AND RESEARCH INSTITUTE (GPERI), MEVAD, DIST. MEHSANA
1	129	GYANMANJARI INSTITUTE OF TECHNOLO
2	098	HANSABA COLLEGE OF ENGINEERING & TECHNOLOGY, SIDHPUR, PATAN
2	024	HASMUKH GOSWAMI COLLEGE OF ENGINEERING, VAHELAL
4	085	HJD INSTITUTE OF TECHNICAL EDUCATION AND RESEARCH, KERA
1	025	INDUS INSTITUTE OF TECHNOLOGY & ENGINEERING, AHMEDABAD
3	095	INSTITUTE OF TECHNOLOGY & MANAGEMENT, UNIVERSE TECHNICAL CAMPUS, VADODARA
3	101	IPCOWALA INSTITUTE OF ENGINEERING & TECHNOLOGY, DHARMAJ, ANAND
3	064	K. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, SAVALI
2	026	KALOL INSTITUTE OF TECHNOLOGY & RESEARCH CENTRE, KALOL
4	027	KANKESHWARIDEVI INSTITUTE OF TECHNOLOGY, JAMNAGAR
1	028	L. D. COLLEGE OF ENGINEERING, AHMEDABAD
1	032	L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
2	029	LALJIBHAI CHATURBHAI INSTITUTE OF TECHNOLOGY, BHANDU
5	086	LAXMI INSTITUTE OF TECHNOLOGY, SARIGAM
3	100	LEADS INSTITUTE OF TECHNOLOGY & ENGINEERING, AT: MATAR. BHARUCH
2	030	LEELABEN DASHRATHBHAI RAMDAS PATEL INSTITUTE OF TECHNOLOGY & RESEARCH, GANDHINAGAR
4	031	LUKHDHIRJI ENGINEERING COLLEGE, MORBI
3	063	MADHUBEN AND BHANUBHAI PATEL WOMEN INSTITUTE OF ENGINEERING FOR STUDIES AND RESEARCH IN COMPUTER AND COMMUNICATION TECHNOLOGY
5	033	MAHATMA GANDHI INSTITUTE OF TECHNICAL EDUCATION & RESEARCH CENTRE, NAVSARI
5	111	MAHAVIR SWAMI COLLEGE OF ENGINEERING & TECHNOLOGY
4	116	MARWADI EDUCATION FOUNDATION - FACULTY OF PG STUDIES & RES. IN ENGG. & TECH., RAJKOT
4	057	MARWADI EDUCATION FOUNDATION'S GROUP OF INSTITUTIONS, RAJKOT
4	097	MARWADI EDUCATION FOUNDATION'S GROUP OF INSTITUTIONS-FACULTY OF TECHNOLOGY, RAJKOT
2	065	MERCHANT ENGINEERING COLLEGE, BASNA, VISNAGAR
1	034	NARNARAYAN SHASTRI INSTITUTE OF TECHNOLOGY, JETALPUR
3	117	NEOTECH INSTITUTE OF TECHNOLOGY
4	035	NOBLE GROUP OF INSTITUTIONS, JUNAGADH
4	102	OM ENGINEERING COLLEGE, AT CHOKLI, DIST JUNAGADH
3	103	OM INSTITUTE OF TECHNOLOGY, AT VANTAVACHHODA, PO: SHAHERA DIST PANCHMAHAL
5	112	PACIFIC SCHOOL OF ENGINEERING
3	037	PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY, WAGHODIA
3	087	PARUL INSTITUTE OF TECHNOLOGY, LIMDA

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Zone	Inst. Code	Institute Name
4	038	R. K. COLLEGE OF ENGINEERING AND TECHNOLOGY, RAJKOT
2	039	S. P. B. PATEL ENGINEERING COLLEGE, MEHSANA
5	123	S.S.AGRAWAL INSTITUTE OF ENGINEERING & TECHNOLOGY, NAVSARI
2	066	SABAR INSTITUTE OF TECHNOLOGY FOR GIRLS, TAJPUR, SABARKANTHA
1	113	SAL COLLEGE OF ENGINEERING
1	126	SAL ENGINEERING & TECHNICAL INSTITUTE, SOLA, AHMEDABAD
1	067	SAL INSTITUTE OF TECHNOLOGY & ENGINEERING RESEARCH, AHMEDABAD
2	088	SAMARTH COLLEGE OF ENGINEERING AND TECHNOLOGY, HIMMATNAGAR
4	036	Sanjaybhai Rajguru College of Engineering
2	040	SANKALCHAND PATEL COLLEGE OF ENGINEERING, VISNAGAR
3	124	SARDAR PATEL COLLEGE OF ENGINEERING, BAKROL ANAND
2	068	SARDAR PATEL INSTITUTE OF TECHNOLOGY, PILUDARA, MEHSANA
3	041	SARDAR VALLABHBHAI PATEL INSTITUTE OF TECHNOLOGY, VASAD
5	042	SARVAJANIK COLLEGE OF ENGINEERING & TECHNOLOGY, SURAT
4	070	SEMI FINANCED DEGREE ENGINEERING COLLEGE, JAMNAGAR
2	075	SHANKERSINH VAGHELA BAPU INSTITUTE OF TECHNOLOGY, UNAVA, GANDHINAGAR
1	043	SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR
1	114	SHREE PANDIT NATHULALJI VYAS TECHNICAL CAMPUS
2	125	SHREE SWAMINARAYAN INSTITUTE OF TECHNOLOGY, BHAT, GANDHINAGAR
1	107	SHRI J.M. SABVA INSTITUTE OF ENGINEERING & TECHNOLOGY-BOTAD,DIST. BHAVNAGAR
4	089	SHRI LABHUBHAI TRIVEDI INSTITUTE OF ENGINEERING & TECHNOLOGY, RAJKOT
5	045	SHRI S'AD VIDYA MANDAL INSTITUTE OF TECHNOLOGY,BHARUCH
2	091	SHRI SATSANGI SAKETDHAM "RAM ASHRAM" GROUP OF INSTITUTIONS.
5	076	SHRI SWAMI ATMANAND SARASWATI INSTITUTE OF TECHNOLOGY, SURAT
5	099	SHROFF S R ROTARY INSTITUTE OF CHEMICAL TECHNOLOGY, AT & PO: VATARIA, BHARUCH
3	050	SIGMA INSTITUTE OF ENGINEERING, VADODARA
1	077	SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY, AHMEDABAD
2	078	SMT. S. R. PATEL ENGINEERING COLLEGE
4	130	Smt. Shantaben Haribhai Gajera Engineering College
5	133	SONDARBA RAMSINH MAGROLA INSTITUTE OF TECHNOLOGY,VALIA
2	115	SWAMINARAYAN COLLEGE OF ENGINEERING & TECHNOLOGY
4	079	TAKSHSHILA COLLEGE OF ENGINEERING & TECHNOLOGY, ISHWARIYA, RAJKOT
2	090	TATVA INSTITUTE OF TECHNOLOGICAL STUDIES, MODASA
1	046	UNIVERSAL COLLEGE OF ENGINEERING & TECHNOLOGY, AHMEDABAD
3	080	VADODARA INSTITUTE OF ENGINEERING, KOTAMBI, WAGHODIYA
5	048	VALIA INSTITUTE OF TECHNOLOGY,VALIA, BHARUCH
2	081	VENUS INTERNATIONAL COLLEGE OF TECHNOLOGY, BHOYAN RATHOD, GANDHINAGAR
5	094	VIDHYADEEP INSTITUTE OF MANAGEMENT & TECHNOLOGY, ANITA (KIM)
5	049	VIDYABHARTI TRUST, INSTITUTE OF TECHNOLOGY & RESEARCH CENTRE, UMRAXH-BARDOLI
2	017	VISHWAKARMA GOVERNMENT ENGINEERING COLLEGE, CHANDKHEDA
4	047	VYAVASAYI VIDYA PRATISHTHAN'S SANCH. COLLEGE OF ENGINEERING, RAJKOT

11. User ID and password for Student/Internal Guide/External Guide/Mentor/HOD/Principal

FOR STUDENT:

Once final year BE student registers on PMMS portal, and after it is validated by the HOD, the user name and password will be sent by e-mail to the student, at the e-mail address, given by the student, while registering his/her details on student registration form. For students username will remain their enrolment number.

FOR INTERNAL GUIDE/HOD/PRINCIPAL:

GTU PMMS system is based on Faculty Members' data provided by colleges through the GTU admin panel. Separate log in details are being provided to Internal Guides of the projects, HOD and Principal to use PMMS platform.

For faculty members other than HOD or Principal, username will Email ID as given by college through GTU admin panel. For HOD & Principal, PMMS user ID will remain the respective standard email ID as generated by GTU, to avoid any complexities in case if any HOD or Principal is changing the college or any other similar cases. Password will be sent via email to internal guide, HOD and principal.

FOR EXTERNAL GUIDE AND MENTOR:

For External Guide, PMMS user name will be email Id as provided by students during their team formation. On team approval by respective faculty, log in details will be sent to given email address by PMMS services.

For Mentor, PMMS username will be email Id as provided by said mentor in [Mentor Registration Form](#), or email id as mentioned by faculty in mentor invitation registration form as given under their account. Once such mentorship request will be approved by university admin then log in credentials will be sent via email to mentioned email address.

NOTE:

For **Students** – password to operate will remain active for final year only.

For **GTU faculty, HOD and Principal** - password will remain same as shared in earlier semester/year, but will be operative only when PMMS system allowed such users for working.

For **External Guide and Mentor** – Once their account is approved and generated to PMMS system with their email address in current or earlier semester/year, then password will remain same for next semester or year, , but will be operative only when PMMS system allowed such users for working.

In case if any user *forgets their password* to operate on PMMS portal, then user may recover the password via providing their registered email address at [Forgot Password](#) functionality on PMMS portal, and an email will be sent to their given email address containing credentials by system.

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The username and password to operate PMMS portal: <http://projects.gtu.ac.in/> is sent via email to the users as below:

Sr. No.	User Category	Password for PMMS is sent via email, at following email address:
1	Students	Email Id provided by student in registration phase
2	Faculty/ Internal Guide	Email ID provided in GTU staff data through http://gtu.ac.in/admin/ by respective college
3	External Guide	Email ID provided by student in registration phase of their team details
4	Mentor	Email id provided by Mentor in registration phase, or Email id as mentioned by faculty in mentor invitation registration form as given under their account.
5	HOD	be_XXX_YY_head@gtu.edu.in where in XXX is the college code & YY is department code
6	Principal	becXXXowner@gtu.edu.in where in XXX is the college code

For HOD and Principal, **ONLY** GTU standard mail ID (becXXXowner@gtu.edu.in or be_XXX_XX_head@gtu.edu.in) is to be used as username in PMMS.

For all activities which are to be performed through faculty account can also be performed from respective HOD or Principal's account as well. PMMS portal has given all rights to HOD and Principal's account as well.

For faculty, whose data is not available at [GTU admin panel](#) or whoever wants to edit/update their profile can update details through: <http://gtu.ac.in/admin/> . Once it is done then only, it will be possible to access this site.

For faculty, Please refer: http://gtu.ac.in/affiliation/2015/09062015_11.pdf

12. External Mentor Management

To invite and engage the external mentors: experts of specific domains (industry owners, subject experts, R&D professionals, and external faculty), in to student's projects, GTU has launched a Mentor Management functionality under PMMS portal.

GTU invites external mentors to get engage with student's project, from any state or any country, without any limitation of geographic boundaries.

Note: Mentors must not be a GTU Faculty.

Any interested person can register as Mentor for final year B.E. projects via following below steps:

I. Invitation by GTU Faculty/HOD/Principal/University PMMS team

- GTU Faculty/HOD/Principal/University PMMS team can send invitation link to any professional through their PMMS account.
- Once they send invitation, an email will be sent on his/her email id with Mentor Registration Form link.
- He/She has to fill up Mentor registration form in PMMS

II. Professional himself/herself can apply to register as Mentor on PMMS portal via following link:

<http://projects.gtu.ac.in/layouts/15/GTUPMMSMentor/ReqForMentorRegistration.aspx>

Mentor registration request will be sent to University PMMS team for approval, University PMMS team will accept/reject the Mentor Request after reviewing the application.

Difference between External Guide and External Mentor.

External guide is the one under whose guidance student is doing any specific project, while the external mentor is the one who can specifically join to any project based on his area of specialisation/interest.

Who can join as external mentor?

Mentors from reputed institutes faculty (apart from GTU colleges), Entrepreneur, Industry Professional, Industry Owner/Partner, R&D Professional, Others can nominates themselves individually or can be invited as an external mentor by any faculty/HOD/Principal.

How to join as external mentor on PMMS portal?

Any mentor himself can apply via following link:

[http://projects.gtu.ac.in/ layouts/15/GTUPMMSMentor/ReqForMentorRegistration.aspx](http://projects.gtu.ac.in/layouts/15/GTUPMMSMentor/ReqForMentorRegistration.aspx) or any

GTU faculty can invite outside experts as mentor via filling mentor invitation registration form as given under their account.

Registration form for mentor registration requires following details: Name, Email id, Contact Number, Qualification, Specialization, Area of Interest, Current position, Years of experience, Company/Organization/College Name, Website of Company/Organisation/College.

Upon receipt of any such request, after checking details University PMMS team will approve/reject request as an external mentor for student's project.

Once university accepts/approves the Mentor Request for any person, login credentials will be sent to mentor on his/her email id.

Using those login credentials, external mentor can log into the PMMS portal: (User Id will be Email ID and password will be as given via email). Log in page is: <http://projects.gtu.ac.in/>

How mentor can select specific projects for mentoring?

Once external mentor logs in to the PMMS portal, he/she will be able to search and see the student projects relevant to his/her area of interest and specialization fields. External mentor can select specific projects as per his interest and can associate for mentorship to particular projects based on their interest and project concepts.

Once Mentor is assigned to one project, that project/team will not be visible to any other mentor at the time of mentorship request.

Any external mentor can be associated **with maximum of FIVE projects** only.

What can external mentor do through PMMS portal?

External mentor can see the details and progress related to project team including students, Guide, HOD and Principal.

Mentor can view comments of Guide, HOD and Principal as been made for any project.

External mentor **can comment** on project report and other PMMS tasks: PPR reports, PSAR reports, Design canvases, Business Model Canvas, PDE report etc.

Students/Team member can view mentor's comments and revert back on same thread. All communication between Mentor and student/Team member would be displayed in single communication thread.

External mentor can comment to guide students, based on their progress and to further suggest them for next phase activities.

Note: The **USER MANUAL** for mentor's role and activity for PMMS activities is available at: <http://projects.gtu.ac.in/UserManual/UserManualforMentor.pdf>

13. List of PMMS features according to user accounts.

Feature	Who can initiate?	Who can approve?	Description
Request to Add Team Member	Team Leader	IG/HOD/Principal/UA	To add new team member in to approved team.
Request to Change Team Lead	Internal Guide	HOD/Principal/UA	To change team leader of approved team.
Request to Remove Student	Internal Guide	HOD/Principal/UA	To remove any team member from approved team
Request To Change Internal Guide	Team Leader	HOD/Principal/UA	To change internal guide due to any reason
Request To Change External Guide	Team Leader	IG/HOD/Principal/UA	To change external guide due to any reason

IG: Internal Guide

HOD: Head of Department

PMMS ACTIVITIES RELATED TO PROJECT

I. Student Registration and Team formation

1. **Students Registration Activity** and approval by *HOD/Principal*. (1st July onward)
2. **Students team formation** for project approval by *Internal Guide/HOD/Principal*. (5th July onward)

Students Registration Activity

At current stage, all BE semester 7 students have to register themselves at above platform: <http://projects.gtu.ac.in/> with their details, once students registers themselves at above portal then their approval to PMMS system is to be made either by their HOD or Principal from their PMMS account (*be_XXX_YY_head@gtu.edu.in* or *becXXXowner@gtu.edu.in* , where in XXX is college code & YY is department code) after due verification of details given by students.

Once HOD/Principal approves the said students, the password to log in to PMMS portal for students will be sent on their given mail ids at registration form. Then students have to log in using their enrolment number as user ID and password which is been sent via email on given mail ID. After log in to the PMMS portal students may change their passwords.

Students Team Formation

After log in to PMMS, students have to form their team based on their project details and project partner's enrolment numbers. Such team is formed by any one of team members, once all other team member's student registration is approved by HOD/Principal.

Student can form their team by giving appropriate details of their project and project guide. Then student have to add team member by giving their enrolment numbers. Only the students who have been approved by HOD/Principal can be added to any project team. Students who will not be approved by any HOD/Principal cannot be added to any team.

Student once added to any team cannot be added to any other team, till he/she is approved/rejected by faculty.

Students who are doing project individually, have to select project as an individual instead of team and has to finish the process.

Once student team request is been made/submitted, it has to be approved by either of **Internal guide**. The same can also be approved by respective **HOD/Principal**.

Once the team is approved for any project then they can update for their regular progress and other activities at PMMS portal. In case of any error contact your guide/HOD/Principal.

Note: For students and teams who are working on different projects during semester 7 & 8, in such cases students may update their details at later stage during semester 8 registration phase. Any such changes in project and team can be made during/using team registration phase.

II. Periodic Progress Report (PPR)

Periodic Progress Report (PPR) task has been added to the PMMS system, with following objectives:

1. Each **student** will be able to update his/her progress in the project at regular interval of time.
2. **Internal guide & the external mentor** (if any), can see the progress of students and can comment on the progress and problems via this online platform.
3. **HOD and Principal** can maintain the track record of students' progress, as well they can also comment (optional).

What to do in Periodic Progress Report (PPR)?

In Periodic Progress Report (PPR) task, **each individual student** (Not a team, so it is an individual student activity) has to give update with respect to his contribution in progress of project at regular time interval of **14 days**, by answering following questions.

1. **What progress student has made in the project related to their final year IDP/UDP?**
(Give brief note about the work student has did in a period of 14 days, and mention status of progress)
2. **What Challenges student has faced and how they are trying to solve them?**
(Student has to list out various challenges he/she had faced, with respect to task allotted to him/her in a project)
3. **What support student needs?**
(Mention details related to kind of support he/she needs against kind of challenges he/she had faced in progress of project)
4. **Which literature student has referred and its analysis?**
(List out all literature, which student has referred in a period of every 14 days, with respect to need of project, challenges student has faced etc.)

Note: *Each student has to submit four set of PPRs, to which his respective guide (Internal and/or external) must have to comment. This activity will run across the semester and students are required to update periodically. Each student has to take photocopy of four PPRs along with the comment given by respective guide/HOD/Principal and has to attach the same in his/her final project report.*

The general set of rules related to Periodic Progress Report (PPR) task are as below:

1. Every student has to submit Periodic Progress Report (PPR) Individually (Not in Team).
2. Each student has to submit minimum four Periodic Progress Reports (PPRs).
3. Every student has to submit Periodic Progress Report (PPR) at every 14 days interval i.e. as below:

Sr. No.	Periodic Progress Report (PPR)	Time Limit
1	1 st PPR	15 days
2	2 nd PPR	15 days
3	3 rd PPR	15 days
4	4 th PPR	15 days
-	Additional PPR	15 days

4. If any student fails to submit any PPR within due date, he/she will not be allowed to submit that particular PPR after such due date, as it will be freezed after due date.
5. After last date for PPR, students can submit any number of Additional PPR any time, this is an optional task. Such report will come with following headers: Additional PPR_XX, where in XX is the numerical value.
6. **Save and Submit button on PPR:** After filling PPR, if student click on **Save** button, student's PPR will be saved and he/she can *edit* the same in future (but within due date only), If student click on **Submit** button, student's PPR will be *submitted* and he/she will not be able to edit the same in future. So be careful while submitting the PPRs.
7. If any student wants to furnish any other details apart from answering above four questions as part of their PPR, he/she can give details via uploading specific file.
8. Once student submits PPR, his/her respective guide (Internal AND/OR External) must have to make comment on it.
9. If any HOD/Principal is also interested to make comment on any PPR, they are also permitted to do so (optional).
10. At the end, students have to take photocopy of submitted PPRs (along with comments from their respective guides – internal as well as external and/or HOD/Principal) and have to attach the same with the final project report.

Note: Students are also required to do PPR activity during semester 8, with respect to their semester 8 project work. Other rules will remain same as above. Applicable Time line will be declared on PMMS portal.

Role of Internal guide/HOD/Principal:

- Make students aware about the **objective** of this activity.
- Internal guide must has to **verify** the PPR and uploaded attachments submitted by each student. Faculty may give their **suggestion/inputs/comments** related to PPR and attachment. The same tasks can also be performed from HOD/Principal's account.
- Based on the inputs from internal guide/HOD/Principal each student has to take necessary action.
- External guide and External mentor can also comment on this activity.

III. Design Engineering - Canvas Activity

For Design Engineering, canvas related activities, please refer the detailed circular: <https://goo.gl/rzv2tg>

During semester 7 the student teams are required to carry out following design engineering canvas activities **related to student's project** to identify and filter out good ideas and project definition to work upon:

1. AEIOU Summary & Mind mapping
2. Empathy Canvas
3. Ideation Canvas
4. Product Development Canvas

The Institute/College will arrange workshops for different design canvases like Empathy, Ideation and similar design thinking practices. All student-teams are required to participate in the workshops, involving whole of the class and prepare necessary documents. Students' teams need to summarize AEIOU framework activity for observation part in Empathy phase. Then they need to document scouted challenges along with user's need with the help of Mind Mapping technique for better understanding. After discussion with Faculty Guide and other groups, the final problem statement has to be defined by clearly mentioning the user's need and problems faced in the domain. All teams need to validate their problem statements with its users.

For the format of various canvases and supportive guidance please refer following documents, (Also the format for each canvas is given in next pages):

- The guideline document for 2016-17 design engineering canvas activity is available at: <https://goo.gl/Vc0MH7>
- The guideline document for 2016-17 design engineering canvas activity is available at: <https://goo.gl/vjUk6o>
- BE 7th Semester Project work flow for all branches: <https://goo.gl/HAOF7i>
- <https://goo.gl/qRo3dr>
- <https://goo.gl/IHZK1X>

Role of Internal guide/HOD/Principal:

- Make students aware about the objective of this activity.
- Internal guide must has to verify uploaded canvas files related to individual teams activity/project. Faculty may give their suggestion/inputs/comments related to canvas and report. The same tasks can also be performed from HOD/Principal's account.
- Based on the inputs from internal guide/HOD/Principal student team has to take necessary action.
- External guide and External mentor can also comment on this activity.

Note: GTU has developed facility for reviewing of design canvases by faculty/HOD/Principal to filter best innovative ideas generated via these tasks. The best ideas will be taken forward as real novel projects to convert into real products.





1. AEIOU Summary & Mind Mapping Canvas

AEIOU Summary:		Group ID: Domain Name:	Date:	Version:
Environment: <ul style="list-style-type: none"> - General impressions/ observations (Style, material & atmosphere) - Floor plan - Elements, features and special notes - Scenes 	Interactions: <ul style="list-style-type: none"> - General impressions / observations (Who is interacting with whom, what?) - Scene of interaction (How it is being done) - Elements, features and special notes 	Objects: <ul style="list-style-type: none"> - General impressions / observations (What components are involved? How?) - Inventory of key objects - Elements, features and special notes 		
Activities: <ul style="list-style-type: none"> - General impressions / observations - Sketch/photo Summary of activity - Elements, features and special notes 	Users: <ul style="list-style-type: none"> - General impressions / observations (Who is present? Role and responsibilities) - Scene of user in context - Elements, features and special notes 			

2. Empathy Canvas

Design For	Design By
Date	Version
USER	STAKEHOLDERS
ACTIVITIES	
STORY BOARDING	
HAPPY	
HAPPY	
SAD	
SAD	

3. Ideation Canvas

Team :		
Project :	People 	Activities 
	Situation/Context/Location 	Props/Tools/Objects/Equipment 

The Ideonaut: *Ideation Canvas*

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IV. Patent Search and Analysis Report (PSAR) Generation Activity

The **Objective** of PSAR activity is to increase awareness regarding patents among students and faculty by making them familiar with patent websites & patent documents. To motivate students for innovative thinking. In PSAR activity every student of final year BE who is doing project individually or in team are required to do patent search related to their IDP/UDP/Final year projects and submit a report of their such work online.

During this Patent Search and Analysis Report (PSAR) generation activity, every student within a team has ***to study at least five (5) patents related either to his/her IDP/UDP or related to his/her area of interest.*** Analysed data of each of these five patents is to be submitted online at PMMS portal.

It will be responsibility of faculty-guide to ensure that each student (team member) will study different patents related to their IDP/UDP. No student of the same team/same class has to repeat same patent as studied by another team member/student of same project/IDP/UDP or class.

The PSAR reports of patent search work by each team will also be made online along with comment and suggestions of the guide. Data will be made available online for creating lateral learning opportunities within and across various branches/sectors of engineering students at GTU.

Role of Internal guide/HOD/Principal:

- Make students aware about ***objectives*** of this activity.
- Faculty has to motivate students for finding out most relevant patented technology related to their project area.
- Faculty has to motivate students for doing such type of innovative project works, which are not available earlier, and has to promote students creativity by motivating them to give an idea related to each studied patent for its possible extension.
- Internal guide must has to ***verify*** the details filled into each PSAR report by students. Faculty may give their suggestion/inputs/comments related to PSAR report. The same tasks can also be performed from HOD/Principal's account.
- Based on the inputs from internal guide/HOD/Principal student team has to take necessary action.
- External guide and External mentor can also comment on this activity.

Note: To scale up PSAR activity, last year GTU had introduced PSAR review process by faculty on PMMS portal. Faculty are advised to motivate students for giving best possible extensions/add on features in each studied patent by every students. These data of PSAR reports will be made online for lateral learning by other faculty and students. And after review of each innovative idea (answer of PSAR question number 27), by faculty best ideas can be identified and transformed/taken into really innovative projects to build novel product or processes in next years. This will enhance the level of innovative idea/projects and mitigate the duplication of work.

STUDENTS CAN USE ANY FREE/OPEN SOURCE AVAILABLE PATENT DATABASES FOR PATENT SEARCH, few of open source patent databases are as below:

Database	Web link
Indian Patent Office Database	http://ipindiaservices.gov.in/publicsearch/
European Patent Office Database (Espacenet)	http://worldwide.espacenet.com/advancedSearch
WIPO Patent Database (PATENTSCOPE)	http://patentscope.wipo.int/search/en/search.jsf
US patent database (USPTO)	http://patft.uspto.gov/
Google Patents	https://patents.google.com/
Free Patents Online	http://www.freepatentsonline.com/
Directory of Country Wise Intellectual Property Offices	http://www.wipo.int/directory/en/urls.jsp

Review of the PSAR reports by the faculty guide, comprising set of questioner as below:

1. Does the improvement idea given by student under question no 27 of PSAR report has potential to take forward as novel project in next semester/year? - Yes/No , and then its description
2. Does this PSAR report is based on patent related to student's project?- Yes/No
3. Does student have prepared PSAR report after proper reading of patent? – Yes/No
4. Does the PSAR report of student is of appropriate quality? – Yes/No
5. Does the PSAR activity had contributed in any way to improve the project of this students? – Yes/No

Structure of the PSAR report

Sr. No.	Question	Answer
Part 1: Patent Search Technique Used		
1	Patent search database used*	Select any patent database from where you got particular patent to prepare PSAR report. (In case you select other, give details in provided text book).
2	Keywords used for search*	Provide the various keywords, which you have used to search patents. Minimum THREE keywords.
3	Search string used*	Provide exact phrase consisting of various keywords and Boolean operators (AND, OR, NOT etc) or wild cards (*, #, ? etc), which are used to get relevant patents.
4	Number of results/hits getting*	Give the number of related patents you get after using proper search string.

Part 2: Basic Data of Patented Invention/Bibliographic Data

5	Category/ Field of Invention*	Provide the branch of Engineering with which patent is associated (For e.g. Mechanical, chemical, electrical etc)	
6	Invention is related to (Class/Area of Invention)*	Provide the end field of technology with which patent is actually associated. (For e.g. – For automobile field’s student: Patent is associated with gear, break, engine etc)	
6a	IPC class of the studied patent	The International Patent Classification (IPC) is a hierarchical patent classification system used in over 100 countries to classify the content of patents in a uniform manner. It is an indexing system to organize patent documents from around the world based on the technical field of the invention, thereby providing a retrieval system by subject matter, independent of keyword searching. Mention the IPC class as mentioned in patent document	
7	Title of Invention/Patent*	Provide the exact title of patent as shown on patent document which you are studying.	
8	Patent No.	For patent applications which are granted, give the exact patent number as given by patent office.	
9	Application Number*	Provide the exact application number of studied patent.	
9a	Web link of the studied patent	Mention the web link of patent studied by you, so it will help for easy retrieval of same patent after words.	
10	Date of Filing/Application* (DD/MM/YYYY)	Mention the date on which application for patent is made.	
11	Priority Date (DD/MM/YYYY)	Mention the FIRST DATE i.e. the date on which application for FIRST patent is made for this invention in ANY OF THE COUNTRY.	
12	Publication/Journal Number	Mention the Publication No./Journal No./Bulletin No etc. in which application for patent is published.	
13	Publication Date (DD/MM/YYYY)	The date on which application for patent is published in official patent journal/bulletin.	
14	First Filled Country	Mention the country where application for patent is filled first time for particular invention.	
15	Also Published as	Countries where Filled	Application No./ Patent No.
		Give details of one or more countries and relevant application/patent number in which application for patent is made to protect SAME invention.	
16	Name of Inventor/s*	Address/City/Country of Inventor*	
	Give details of one or more inventors associated with development of invention mentioned under this patent.		

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	Name of Applicant/ Assignee*	Address/City/Country of Applicant*
17	Give details of one or more Applicant/Assignee associated with development of invention mentioned under this patent.	
18	Applicant for Patent is*	Mention whether the applicant for patent is Individual Person/s or Organization (Company/College/University etc).
Part 3: Technical Part of Patented Invention		
19	Limitation of Prior Technology/Art*	Give details about, what are the problems associated with previous available technologies, prior to this patent.
20	Specific Problem Solved/Objective of Invention*	Give details about objectives and benefits of particular Invention/Patent and list out the specific problems, which were overcome by technology behind this patent.
21	Brief about Invention*	Give detailed information about patent, and its technology. Content should comprise details related to following questions: What is this Invention? What are its Components? What is the role of each component? What is the flow of process? How the invention will work? etc...
22	Key learning points*	Give point wise details related to, what each student has learnt after studying each patent.
23	Summary of Invention*	"Here students have to give details about what they have learnt after reading each patent document. Make note on following points, IN YOUR WORDS: What is the invention about? What are problems of prior art? What are the benefits of patented technology? Etc. Students have to make summary of each patent in not more than 500 words."
24	Number of claims*	Give the exact number, How many claims are there in studied patent.
25	Patent Status*	Select any one which is applicable for studied patent – Published Application/Granted Patent/ In-force Patent/ Failed to maintain the Patent/Expired Patent
26	How much this invention is related with your project? *	Select any one indicating % relevance of this patent document with you project: > 91 %, 71 to 90%, < 70 %, Not related to project

27	<p>Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words) *</p>	<p>After studying each patent thoroughly and by answering all the previous questions, each student has to answer this question very carefully and give your valuable ideas in a very precise manner.</p> <p>Here students have to think for any possible modification/improvement in the studied patent he/she can make so as to maximise its effectiveness/user friendliness.</p> <p>Students have to give idea about possible alterations they can make, in briefly about 500 words.</p>
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FAQs related to PSAR

1. Students can study any patent from any patent database related to his/her IDP/UDP and can make Patent Search and Analysis Report (PSAR) on that patent. Sometimes single invention is patented by applicant in different countries, hence students have to take care that they have to select different patented inventions to prepare a summary report.
2. Many patent documents are available as an image copy or scan copy of the original document. In such cases, students may try to search for same patent via different patent search engine. If not available, then to copy the content from such patent for generating Patent Search and Analysis Report (PSAR) on that patent, student can take help of following software: **ABBYY FineReader**. It is available at <http://finereader.abbyy.com/>
3. **The above software is a free trial version of ABBYY FineReader, so that at a time you can select any two pages of patent document and convert them into .doc file.**
 - a. Students have to check the correctness of data copied from text generated by such software's with the original patent document while preparing PSAR reports.
4. If any student finds any patent related to his/her IDP/UDP in language other than English, then after converting image file to .doc file as mentioned in step 2, student can take help of **Google Translator** (www.translate.google.com) to translate patent from any language to English. By doing so student can make a Patent Search and Analysis Report on that patent. (Generally abstract of every patent is available in English. And by studying such abstract student can make a decision, whether that particular patent is related to his/her IDP/UDP or not.)
5. Students can also take help of online patent translator tool available with some databases (Espacenet & PatentScope) to convert text of other languages to English.
6. While Studying Indian Patents, in most cases student needs to refer following Forms/ Documents to generate PSAR report:
 - a. **Form 1: Application for Grant of Patent** (Details about Application No., Applicant-Inventor & their address, Title of Invention, Filing Date, Priority Date, First filled country, Details about application filed in another foreign countries and related application/patent no. etc. will be available from this form)
 - b. **FORM 2 : Provisional/Complete Specification** (Details for in-detail information on Invention, Limitation of prior art, Specific Problem Solved/Objective of invention and Summary of invention will be available from this form)
 - c. **Claims:** Sometimes Claims are mentioned under Form 2, while some time they were

also published under separate document entitled as “Claims”.

7. In case of Indian Patents, where sometimes you find two or more copies of any form/document. In such cases student have to make Patent Search and Analysis Report based on the form/document which is the **latest one and contains all the necessary information**. (For example – Under view documents option for any patent, there are three copies of Form 2, like Form-2, Form-2 (11/05/2010), and Form-2 (03/01/2011). Then students have to study the Form2 (03/01/2011) which contains **all** updated information. This rule is applicable for all the forms/documents.
8. While preparing PSAR reports, it is advisable to prepare reports using patents obtained from different patent databases. (Like one from Indian Patent Office, One from European Patent Office, One from US Patent Office, One from WIPO Patent database and so on)

Study Material for PSAR

- To know more about Basics of IPR, Patent Searching and How to generate Patent Search and Analysis Report read the following modules available at the below mentioned web link:
 - Module 1- Basics of IPR and Patent
<https://drive.google.com/file/d/0B4DgcqHvqySbVmt2aFRvdjBwa0E/view?usp=sharing>
 - Module 2- Patent Search Methodology
<https://drive.google.com/file/d/0B4DgcqHvqySbck9QbC1TejV6TIU/view?usp=sharing>
 - Module-3: Preparation of Patent Search and Analysis Report
<https://drive.google.com/file/d/0B4DgcqHvqySbQVhKNjh0NHZtaWs/view?usp=sharing>
 - Compendium of Module-3: Interpretation of Patent documents from different databases:
<https://drive.google.com/file/d/0B4DgcqHvqySbd052VVluR1F1ZUk/view?usp=sharing>

The material for self-study is also being made available through ‘you tube’ channel of GTU Innovation Council.

MODULE 1: BASICS OF IPR & PATENTS

Part 1 of 3: <http://www.youtube.com/watch?v=P70EJkELI90>

Part 2 of 3: <http://www.youtube.com/watch?v=OLOAx8G9PL0>

Part 3 of 3: https://www.youtube.com/watch?v=He_JjuEKnE&feature=share

MODULE 2: PATENT SEARCH METHODOLOGY

Part 1 of 5: <http://www.youtube.com/watch?v=NymTmy3l9r4&feature=youtu.be&a>

Part 2 of 5: http://www.youtube.com/watch?v=IbD3VBQe_o8&feature=youtu.be&a

Part 3 of 5: http://www.youtube.com/watch?v=UeTxQbF1_4c&feature=youtu.be&a

Part 4 of 5: <http://www.youtube.com/watch?v=G0gVI3IGFFM&feature=youtu.be&a>

Part 5 of 5: <http://www.youtube.com/watch?v=6Dpujnn8574&feature=youtu.be>

HOW TO GENERATE PATENT SEARCH & ANALYSIS REPROT (PSAR)

Part 1 of 5: http://www.youtube.com/watch?v=X_y-aB7z0tA&list=PLnNDkCrMqsxI0WvGrEh3w_o99UInsaQka&index=1

Part 2 of 5: http://www.youtube.com/watch?v=BvwYhTYuU&list=PLnNDkCrMqsxI0WvGrEh3w_o99UInsaQka&index=2

Part 3 of 5: http://www.youtube.com/watch?v=jagK8LdqXLA&list=PLnNDkCrMqsxI0WvGrEh3w_o99UInsaQka&index=3

Part 4 of 5: http://www.youtube.com/watch?v=l1j4J7h9RgU&list=PLnNDkCrMqsxI0WvGrEh3w_o99UInsaQka&index=4

Part 5 of 5: http://www.youtube.com/watch?v=irc1A9kfHlw&list=PLnNDkCrMqsxI0WvGrEh3w_o99UInsaQka&index=5

V. Business Model Canvas (BMC) Exercise

All student teams have to develop and prepare a BMC with respect to their project. They also need to upload the prepared report on BMC at project site.

Detailed circular/guideline related to all canvas including BMC is already available at:

http://files.gtu.ac.in/circulars/14SEP/09092014_04.pdf

Objectives of BMC:

Business model canvas is used to validate the market significance of products and services which will be of technology nature in this case. Technology projects are often solutions or processes that solve a technical problem. However the market implementation of such solutions also require that the problem solution is designed to overcome not just the technical barriers but also market and business related barriers of costs, customer reach and collaborations and those that pertain to the practical nature of limited initial capacities within the team.

Thus business model canvas can be used to visualise such market problems and customer expectations. This exercise will increase the market potential and penetration of technology goods and services. This will make them more effective in market.

This exercise will bring discussions on viability and cost effectiveness into picture along with their clear impact. This exercise will enable students to have a clear understanding on the steps required to ensure that whatever solution they develop as their project should have a user who can afford it with desired needs. This exercise also helps students to understand the true value of the proposed solution.

Duration of the exercise: This exercise will take average 3-4 hours including the presentation by each team where all other team will comment and suggest on the presenting team's project canvas. If required colleges/branches can certainly take extra time, if required.

Process to conduct such hands on workshop:

The process of conducting such workshop will be nearly the same as the ideation canvas exercise on page 3 of above hyperlinked circular.

You may refer more details about this at:

http://en.wikipedia.org/wiki/Business_Model_Canvas &
<https://www.youtube.com/watch?v=QoAOzMTLP5s>

BMC canvas for IDP/UDP exercise for BE final year students

The Business Model Canvas

Designed for: _____ Designed by: _____ Date: _____ Version: _____

<p>Key Partners</p> <p>Who are our key partners? Who are our key suppliers? Which key resources do we acquire from partners? Which key activities do partners perform?</p> <p>KEY RESOURCES Physical Human Financial Intellectual Social</p>	<p>Key Activities</p> <p>What key activities do our Value Propositions require? Our distribution channels? Customer relationships? Revenue streams?</p> <p>KEY RESOURCES Physical Human Financial Intellectual Social</p>	<p>Value Propositions</p> <p>What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? Which bundles of products and services are we offering to each CUSTOMER SEGMENT? Which customer needs are we satisfying?</p> <p>KEY RESOURCES Channels Customer Relationships Customer Segments Cost Structure Revenue Streams Key Activities Key Partners</p>	<p>Customer Relationships</p> <p>What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which of us have we established? How are they integrated with the rest of our business model? How costly are they?</p> <p>KEY RESOURCES Channels Customer Relationships Customer Segments Cost Structure Revenue Streams Key Activities Key Partners</p>	<p>Customer Segments</p> <p>For whom are we creating value? Who are our most important customers?</p> <p>KEY RESOURCES Channels Customer Relationships Customer Segments Cost Structure Revenue Streams Key Activities Key Partners</p>
<p>Cost Structure</p> <p>What are the most important costs inherent in our business model? Which key resources are most expensive? Which key activities are most expensive?</p> <p>KEY RESOURCES Physical Human Financial Intellectual Social</p>	<p>Revenue Streams</p> <p>For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay?</p> <p>KEY RESOURCES Channels Customer Relationships Customer Segments Cost Structure Revenue Streams Key Activities Key Partners</p>			

DESIGNED BY: Business Model Foundry AG
The makers of Business Model Generation and Strategyzer

Strategyzer
strategyzer.com

For description about various terminologies and FAQ on BMC, refer page no 15-18 of following file: http://files.gtu.ac.in/circulars/14SEP/09092014_04.pdf

Role of Internal guide/HOD/Principal:

- Make students are aware about the **objective** of this activity.
- Internal guide must has to **verify** the uploaded file and report related to individual teams activity/project. Faculty may give their **suggestion/inputs/comments** related to canvas and report. The same tasks can also be performed from HOD/Principal's account.
- Based on the inputs from internal guide/HOD/Principal student team has to take necessary action.
- External guide and External mentor can also comment on this activity.

VI. Patent Drafting Exercise (PDE)

NOTE: All student teams have to generate PATENT DRAFTING EXERCISE (PDE) forms ONLY from <http://projects.gtu.ac.in/>

As a part of BE semester 8 students project work, GTU has introduced “**Patent Drafting Exercise (PDE)**” in 2013-14. *This activity is designed to train our students about provisional patent filing procedure in India, its requirements, necessary forms, fees, associated time limit etc.* To support this activity GTU has organized several Faculty Development Programmes (FDP) to train faculty from all GTU affiliated engineering colleges about this new initiative. All such trained faculty are supposed to help final year BE students at their respective colleges, to train final year students about the PDE.

This is in continuation of the “**Patent Search & Analysis Report (PSAR)**”, which was prepared by all students during semester 7 of BE as a part of Prior Art Search (PAS) activity. *PSAR was introduced to make students aware about patents, patent information websites, patent search, patent documents etc.* in the area of their final year project so that they can improve the novelty of the final year projects by knowing what has been done before.

Objectives of Patent Drafting Exercise (PDE)

- To train all students about provisional patent filing procedure in India
- To make all students familiar with Patent filing forms (Form- 1, 2 & 3)
- To make students aware about the various requirements/data to be provided for filling of such forms.
- To teach students about various patent filing forms, fees and time limit associated with various operations associated in patent filing procedure in India.

Key guidelines for Patent Drafting Exercise (PDE)

1. This exercise is applicable to all BE (**Semester 8**) students.
2. This exercise is to be done by **team** of students doing project together (**One PDE for one project**).
3. To prepare the PDE, every student team has to assume that their project is novel and innovative. The team prepares document/forms, that would be required if the team were to file a patent on the work done by them for the Final Year project.
4. For filing a provisional patent, three basic forms are required. These forms are **Form 1** (Application for Patent), **Form 2** (Provisional/Complete Specification) and **Form 3** (Information and undertaking under section 8 of Patent Act). For completing the required work under PDE, every student team has to prepare these three forms for their final year project.
5. This exercise can be done even though IDP/UDP project is still on-going.
6. PDE is to be carried out for project undergoing/completed in BE (Semester 8) only. For those students who have carried out two different projects during semester 7 &

- 8 (with same team/different team or any change in team member or project definition), the PDE is to be prepared for the BE (Semester 8) project only.
7. All the student teams have to prepare and get ready with their draft patent filing forms in [word files](#) till the facility to generate Patent Drafting Exercise (PDE) will make live on project site.
 8. The forms/documents prepared/generated via this Patent Drafting Exercise (PDE) are to be submitted along with the project report by all student teams.
 9. The PDE is just a mock exercise about preparing provisional patent filing documents/forms. The documents generated at the end of this exercise are not for filing with any patent office. This activity is for learning purpose ONLY.

Study material for PDE

Overview of Drafting Provisional Patent

- Part – 1: <https://www.youtube.com/watch?v=87pZYu-28fo>
Part – 2: <https://www.youtube.com/watch?v=XX2NUVpPJg>
Part – 3: <https://www.youtube.com/watch?v=wg3fAw2orel>
Part – 4: https://www.youtube.com/watch?v=al_eDO7Kg2g

Patent Drafting Exercise

- Part – 1: <https://www.youtube.com/watch?v=DCDNY0AG8UU>
Part – 2: <https://www.youtube.com/watch?v=TCSnj1ukOfs>
Part – 3: https://www.youtube.com/watch?v=diF6AD_TfKw

Role of Internal guide/HOD/Principal:

- Make students aware about the **objective** of this activity.
- Internal guide must have to **verify** the generated PDE report related to individual teams activity/project. Faculty may give their **suggestion/inputs/comments** related to PDE report. The same tasks can also be performed from HOD/Principal's account.
- Based on the inputs from internal guide/HOD/Principal student team has to take necessary action.
- External guide and External mentor can also comment on this activity.

VII. Plagiarism Search Report/Certificate

Anti-plagiarism check certificate for the final year project report

All the student teams have to check their project report for plagiarism, which indicates percentage similarity of the languages used during drafting project report, using a good plagiarism-checking/search software package. All student teams have to get plagiarism search certificate using Turnitin plagiarism checker: <http://turnitin.com/> .

Turnitin checks for potential plagiarism and close the feedback loop between instructors and students. It easily provides feedback to students and assess their work quickly. **Turnitin is a paid online service to check plagiarism content of research papers and reports. GTU will provide free accounts to colleges and provide specific login credentials for turnitin.**

Colleges where Master of Engineering course is running, have already been assigned login credential for turnitin to check plagiarised content of ME project reports, and such colleges have to use the same credentials for plagiarism content check of BE project report. Colleges where ME course is not running, will be provided newer turnitin credentials for the said purpose.

The student has to check his/her dissertation thesis for plagiarism, which indicates % similarity of the languages used during drafting, using Paid database "Turnitin"(www.turnitin.com).

GTU has provided/will provide the Id & Password to each institute for Turnitin software.

Colleges have to upload all their project reports on turnitin web, and report of plagiarised content will be provided by portal after sometime (one or two days)

Once report is downloaded from "Turnitin", **last two pages of report** comprises of % similarity with priorly published literatures. **Preferably it should be less than 30%. If the similarity is > 30 % then the Project Report/thesis will not accepted for university examination.**

Students have to take a print of last two pages (or in some case three pages)of report and it is required to be signed by himself/herself as well as by respective guide and has to include in thesis after compliance certificate.

The guide has to mention in the Certificate that he/she has received the plagiarism report of respective student and he/she agreed that it is acceptable to them.

Scanned PDF copy of that turnitin report is required to be uploaded on PMMS portal by each team doing final year project/IDP/UDP with verification signature of concerned internal project guide.

Note: *Students are required to attach such plagiarisms certificate/report in to their project report; as well they are also required to upload same certificate/report on project site: <http://projects.gtu.ac.in/> . THE REPORT SHOULD NOT HAVE MORE THAN 30% OF THE PLAGIARISED CONTENT.*

Role of Internal guide/HOD/Principal:

- Make students aware about the **objective** of this activity.
- Internal guide must has to **verify** the uploaded plagiarisms report file related to individual teams activity/project. Faculty may give their **suggestion/inputs/comments** related to project report. The same tasks can also be performed from HOD/Principal's account.
- Based on the inputs from internal guide/HOD/Principal student team has to take necessary action.
- External guide and External mentor can also comment on this activity.

VIII. Final Project Report

Project Report (a spiral bound hard copy) - It is required to be a report of the work, done by the team of students during the academic semester/year. The Report is to be submitted whether the project has been completed successfully or the work is going to be carried out by next semester/year students.

Basic format and requirements:

Paper must be White Royal Executive Bond, 85 gsm Paper of A4 size only.

One side Laser Printing: **Entire Report either Black or Colour
(Title & Certificate must be in Colour)**

Line Spacing: 1.5

Printing Margin: 1.25 inch Left Margin
1.0 inch all Side Margin (Top + Bottom + Right)

Font: Times New Roman **only**

Font size: **(Text should start from next line after Title)**

MAIN TITLE: **18 BOLD UNDERLINE** (Alignment: Left) (Title Case)

SUB TITLE: **14 BOLD UNDERLINE** (Alignment: Left) (Title Case)

MATTER: **12 Normal** (Alignment: Justify) (Title Case)

- Figures must be with outside border & in centre of whole margin. All details in the Figures must be **clearly readable**.
- Write figure number at the bottom of figure, **E.g.” Fig. 5(a)”**, followed by title of figure in title case.
- Throughout text figure must be cited as “Fig.5 (a)”.
- Write table number at the top of table, **E.g. “Table 1”** : followed by title of table in title case
- All paragraphs must start **without** ‘tab’.
- **Unified line** spacing between paragraphs.
- Start new chapter from new page.
- No blank area at the end of each page except last page of chapter.
- All **equations** in the middle of line with equation no. at the end of line within small brackets, **E.g.(2)**.
- **No dots** between equation and equation no. space before and after equation sign.
- Chapter heading must be identical for each new chapter as shown below.

Guidelines for Final Year Project Report: The Project report should have following components:

First Page	Title of the Project, IDP/UDP project, Name and Id. No. of the Students who have worked for the project, Academic year, Name of Industry – if it is an IDP Project, Name(s) of Industry and Faculty Guide(s).
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Next Pages	Index
Next Pages	<ul style="list-style-type: none"> • Acknowledgements • Certificates from college (Suggested Format) • If you have done an IDP, and if the industry finds the solution useful kindly attach certificate of proof of your claim and attach along with the report. Ask the industry to precisely mention what benefit they got from your solution implementation in the company letterhead. • Certificate generated from project site for Completion of all activities at PMMS portal of GTU. • Certificate obtained from the Plagiarism checking software. Undertaking About Originality Of Work (Kindly refer Annexure 2 on Page No. 4 of the attached link document)
Chapter 1	<p>Title : Introduction</p> <p>1.1 Problem Summary (What exact problem are you trying to solve?) and Introduction,</p> <p>1.2 Aim and objectives of the project</p> <p>1.3 Problem Specifications</p> <p>1.4 Brief literature review and Prior Art Search (PAS) about the project. [It should include Web search/research publication, User feedback, Vendor/market search, Patent Search (Do not attach the whole PSAR report, mention just one page gist/summary)].</p> <p>1.5 Plan of their work</p> <p>1.6 Materials / Tools required.</p>
Chapter 2	<p>Design: Analysis, Design Methodology and Implementation Strategy.</p> <p>Explain your work including Observation Matrix, Ideation canvas, and Product development canvas in the context of your project. For better understanding about these canvases, you may refer:</p> <p>https://drive.google.com/file/d/0B4DgcqHvqySbMDZiN1VsQ05Edmc/view?usp=sharing or https://drive.google.com/file/d/0B4DgcqHvqySbNVF3d3RCMFM1Szg/view?usp=sharing (Explain every step in the above canvases with your own narration based on your understanding and inferences. Also attach the photocopy/image of your canvases in A4 equivalent size).</p>
Chapter 3	<p>Implementation:</p> <p>Should covering actual implementation, Results, Reports, Snapshots, Testing and Verification.</p>

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Chapter 4	<ul style="list-style-type: none"> • Summary of the results. Advantages of your work/results/methodologies. Usefulness with respect to existing solutions. Scope of future work. • Benchmarking your project with existing product/services or solutions. Mention the Unique Features of your Innovation/Project (IDP/UDP).
References	<p>In the alphabetic ascending order Citations to be provided throughout the Report.</p>
Appendix	<p>Apart from above listed items, project report will also include below information (as an appendix to project report), submitted/generated via project management site: http://projects.gtu.ac.in/ . These have to be represented to external examiner as well.]</p> <ul style="list-style-type: none"> • Copy of four Periodic Progress Reports (PPR) as submitted by each student, along with guide comment on it.– For both semesters. • Patent Search & Analysis Report (PSAR) as submitted by each student, along with guide comment on it.– For semester 7 ONLY • Design Engineering canvases: AEIOU Summary, Empathy Summary, Ideation, Product Development and its report generated in line with the existing project.– For semester 7 ONLY • Business Model Canvas (BMC) and its report generated in line with the existing project. – For semester 8 ONLY • Draft provisional patent filling forms generated during Patent Drafting Exercise (PDE). – For semester 8 ONLY • Copy of paper published on the basis of this Project / Patent filed (if applicable). (Kindly attach any paper you have published based upon the work related to your project in any national/international conferences.) — For both Semesters

NOTE:

- ***This is a sample format, any college may amend this format based on the need, but it has to ensure that all above listed items must to be included in project report.***
- ***The project report copy which is to be uploaded on project site, need to include above items.***

The project reports have to be submitted to departmental HODs of student’s College/ Institution in spiral bound or hard copy before the practical/Viva-Voce examination. In absence of the project guide in any unavoidable circumstances HOD/suitable authority/other faculty members can sign on the certificates.

Further the complete project report needs to be uploaded in soft copy to the GTU web portal specially designed for this purpose: <http://projects.gtu.ac.in/> (Every team needs to ensure completion of all tasks at project portal)

NOTE:

- *No student/college has to submit any hard bound project copy/CD to GTU, as GTU will receive the data from student's profile in PMMS portal. Every College may preserve project data of all students/teams in a soft copy on a CD rom for further record.*
- *Students who are working on projects related to VISHWAKARMA YOJANA, have to work as per instructions from their guide to cover all project activities.*

Students need to submit **two copies** of their project report in spiral bound as follows:

1. Student Copy
2. Guide/Department/College Copy

Role of Internal guide/HOD/Principal:

- Make students aware about the **objective** of this activity.
- Internal guide must has to **verify** the uploaded project report file related to individual teams activity/project. Faculty may give their **suggestion/inputs/comments** related to project report. The same tasks can also be performed from HOD/Principal's account.
- Based on the inputs from internal guide/HOD/Principal student team has to take necessary action.
- External guide and External mentor can also comment on this activity.

IX. Certificate generation for completion of all activities in IDP/UDP from PMMS portal

A Special functionality is developed at project site: <http://projects.gtu.ac.in/>, to generate completion certificate mentioning the status of various activities performed by each student of every team. This certificate is to be generated by each group member individually. This certificate will mention about whether each student has completed all tasks or not, whether any activity is still pending etc.

All students are required to generate this certificate via project site, and are required to attach the same with their project report along with their respective guide's signature.

This certificate will include status report for completion of following activities being carried out via project site during semester 7 and 8:

1. Submission of four Periodic Progress Reports (PPR) upload by each student and comments by guide on the same. (Individual student activity) - **For both semesters.**
2. Patent Search & Analysis Report (PSAR) generated by each student and comments by guide on the same. (Individual student activity) – **For semester 7 ONLY.**
3. Design Engineering canvases: AEIOU Summary, Empathy Summary, Ideation, Product Development canvases upload (Team activity) – **For semester 7 ONLY**
4. Business Model Canvas and its report upload. (Team activity) – **For semester 8 ONLY**
5. Generation of Patent Drafting Exercise (PDE) forms. (Team activity) - – **For semester 8 ONLY**
6. Final project report uploads. (Team activity) - **For both semesters.**
7. Uploading of the plagiarism search report. (Team activity) - **For both semesters.**

Role of Internal guide/HOD/Principal:

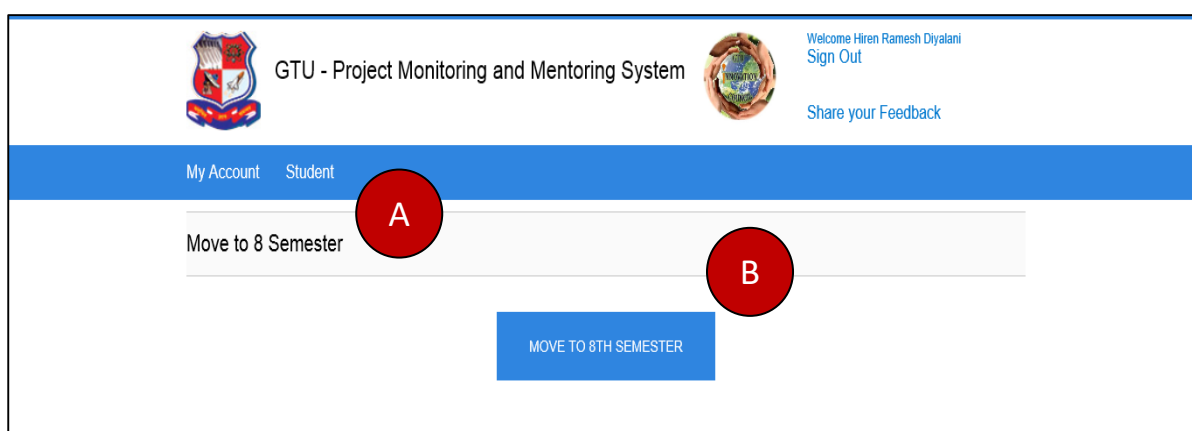
- Make students are aware about the **objective** of this activity.
- Internal guide must has to **verify** the generated certificate and sign the same in student's printed copy of project report.
- In absence of the project guide in any unavoidable circumstances HOD/suitable authority/other faculty members can sign on the certificates.

STUDENT'S MOVEMENT FROM B.E. SEMESTER 7 TO SEMESTER 8

X. Guideline for student's movement from B.E. 7th semester to 8th semester

Process flow for student's movement to 8th semester

1. Open <http://projects.gtu.ac.in/>
2. **Login with your 7th semester credentials** and you will be redirected to Dashboard screen wherein you will see this message: "This activity has not been allowed".
3. Please click on "**Move to 8th semester**" Root Menu **(A)** as mentioned in below screenshot

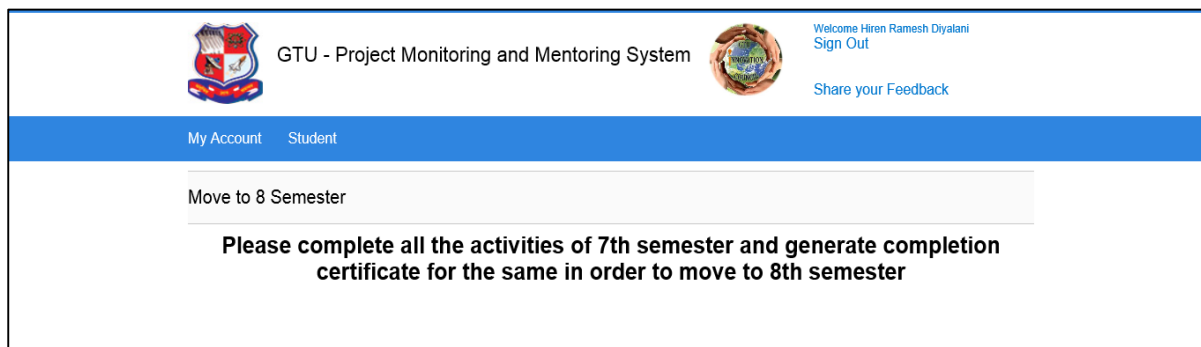


4. On Move to 8th semester screen, you will find button namely "Move to 8th semester" **(B)**
5. Clicking on "Move to 8th semester" button, your semester will be changed from 7 to 8
6. You will be able to perform 8th semester activities starting from Team Formation.

Process Flow on how to manually generate Completion Certificate for 7th semester (for students who had not generated completion certificate during 7th semester)

The students who exists in PMMS during 7th semester and have not generated Completion Certificate (for 7th semester) will see this message after PMMS Login: **"Please complete all the activities of 7th semester and generate completion certificate for the same in order to move to 8th semester"**.

Please find below screen for reference:



GTU - Project Monitoring and Mentoring System

Welcome Hiren Ramesh Diyatalani
Sign Out

Share your Feedback

My Account Student

Move to 8 Semester

Please complete all the activities of 7th semester and generate completion certificate for the same in order to move to 8th semester

All such students are require to follow below process in order to move into 8th semester:

1. Students are require to submit (scan copy or photo copy via email) letter properly **signed and sealed from the college faculty and HOD**, clearly stating that all your project work of 7th semester has been successfully completed and verified.
2. Such letter is required to be printed on **college letter head**.
3. Format of such letter is provided as an **annexure** to this guideline document.
4. Students are required to submit the scan copy or photo of annexure document on official letter head of college with filled details, via email to s4@gtu.edu.in . Mention the subject line as “Annexure: Letter format for students who had not generated completion certificate during 7th semester”

Primary set of rules for student’s movement from 7th semester to 8th semester

1. The students who exist in 7th semester and have not generated Completion Certificate (for 7th semester) will not be able to move to 8th semester.
2. The students who have been moved to 8th semester by University PMMS team and had not formed any team in 7th semester, will not be allowed to create Team in 8th semester with below options:
 - Old Project with Old Team
 - Old Project with New Team
 - New Project with Old Team
3. The students who exist in 7th semester in PMMS and were **DETAIN STUDENTS** will not be able to login to PMMS and consequently will not be able to move to 8th semester.
4. The students who exist in 7th semester in PMMS and will be able to move to 8th semester. For these students, 8th Semester detain scenario work as mentioned below:
 - If the student moves to 8th semester through “Move to 8th semester interface”, and later on detains in any exam then, such student will be detained for 8th semester and locked (will not be able to Login) and his/her all 8th semester activates (if performed) will be removed from PMMS.

- If the student does not move to 8th semester (through “Move to 8th semester interface”) and has created team in 7th semester in PMMS, then he will remain in 7th semester in PMMS, but when in next academic year, 7th semester is re-open then, he/she will be able to view only his/her old team profile but would not be able to perform any PMMS activity for 7th semester.
- If the student does not move to 8th semester (through “Move to 8th semester interface”) and has not created team in 7th semester in PMMS, then he will remain in 7th semester in PMMS and when in next academic year, 7th semester is re-open then he will be able to perform all 7th semester PMMS activity.

For those students who are *earlier* detained in 8th semester and they are relived while current/upcoming 8th semester tenure, will have to contact respective HOD or Principal and have to request for their PMMS registration (Student registration for detained students) from their respective PMMS account.

Once their Student Registration is done by HOD or Principal, they will be able to form team. However, they will not be allowed to create Team with below options as they have not performed any past project and were not be part of any team yet:

- Old Project with Old Team
 - Old Project with New Team
 - New Project with Old Team
5. The students who exist in 7th semester in PMMS and if falls under **UFM Case** (for 7th semester) then he/she will not be able to login to PMMS and consequently will not be able to move to 8th semester.
6. The students who exist in 7th semester in PMMS are able to move to 8th semester. For such students, who moved to 8th semester, UFM scenario works as mentioned below:
- If student moves to 8th semester through “Move to 8th semester interface”, then University PMMS team can add him/her in UFM student’s list for 8th semester and he/she will be locked (will not be able to login) and his/her all 8th semester activities (if performed) will be removed from PMMS.
 - If student does not move to 8th semester (through “Move to 8th semester interface”) and has created team in 7th semester in PMMS, then he will remain in 7th semester in PMMS and University PMMS team cannot add him/her in UFM case for 8th semester. When in next academic year, 7th semester is re-open then, he/she will be able to view only his/her old team profile but would not be able to perform any PMMS activity for 7th semester.
 - If the student does not move to 8th semester (through “Move to 8th semester interface”) and has not created team in 7th semester in PMMS, then he/she will remain in 7th semester in PMMS and University will not be able to add him/her in UFM case for 8th semester. When in next academic year, 7th semester is re-open then, he/she will be able to perform all 7th semester PMMS activity.

XI. Guideline for student’s project team formation in 8th semester

(Options and process for team and/or project change during 8th semester)

Process flow for student’s project team formation in 8th semester

1. Open <http://projects.gtu.ac.in/>
2. Student will Login with username and password
3. On Team Registration page, student will select the appropriate option for following set of questions:

DO YOU WANT TO CONTINUE WITH 7TH SEMESTER PROJECT DURING 8TH SEMESTER?

Yes		No	
Select Option: Old Team/New Team		Select Option: Old Team/New Team	
<p><i>If select Old Team,</i> then team members of the old team will be displayed and student can create project request with old project and old team members/team leader</p>	<p><i>If select New Team *</i>, these two options will appear Individual /Team base</p>	<p><i>If select Old Team,</i> then team members of the old team will be displayed and student can create project request with new project and old team members/team leader</p>	<p><i>If select New Team,</i> these two options will appear Individual /Team base</p>
	<p><i>If select Individual,</i> student can create project request with old project and Individual team</p>		<p><i>If select Team base</i> student can create project request with old project with new team members</p>

* **Select option, If students wants to add any newer member/remove any of earlier member from their team for old project.**

4. In options mentioned under above point no.3, if student selects **New Project or New Team**, then following further options will be visible to students:

New Project	New Team
<p>Reason for project change:</p> <ul style="list-style-type: none"> • 7th semester project is completed and working on new project • Company is blacklisted/closed/changed • Project definition is not enough for continuation in 8th semester • Other 	<p>Reason for Team change:</p> <ul style="list-style-type: none"> • Any team member is either detained or removed • Other

He/She has to select one answer from above options. Selected option will be saved in system and on List.

GTU INNOVATION COUNCIL (GIC)

5. Project request will be sent to Internal Guide, HOD and Principal for approval.
6. Internal Guide or HOD or Principal can approve/reject the Team Registration Request. And accordingly, Project Team will be formed.
7. Team Leader will be able to do following activities:
 - Request to add Team Member
 - Request to change Internal Guide
 - Request to change External Guide
 Approval for above requests will be sent to HOD and Principal.
8. Internal Guide will able to do following activities:
 - Request to remove student
 Approval for above request will be sent to HOD and Principal.

Screenshots for PMMS team registration during 8th semester (different cases):

CASE 1: Old Project with Old Team – Year long project with the same team as of 7th semester.

Team Registration Requests

Sr. No	Project Name	Team Members	Status	Semester	Action
1	Improving The Power Factor In Industry By Engaging APFC Unit	Patel Krunal Amrutlal Pandya Jigarkumar Bipinchandra Chaudhari Savankumar Dhirubhai Bariya Yoginiben Vipinbhai	Approved	Semester 7	View Details

Do you want to continue semester 7 project in semester 8 ?

Select Option to continue with Semester 7 : Yes No

Selected Option: Old Team New Team

Sr. No	Enrollment No.	Name	College	Department	Mobile No.	Email
1	120410109044	Patel Krunal Amrutlal	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	9723473390	krunalp312@live.com
2	120410109021	Pandya Jigarkumar Bipinchandra	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	7383735076	jbpanya911@gmail.com
3	120410109032	Chaudhari Savankumar Dhirubhai	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	9925562425	savanchaudhary28@gmail.com
4	120410109035	Bariya Yoginiben Vipinbhai	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	8511184835	yogini774@gmail.com

[TEAM REGISTRATION](#)

CASE 2: Old Project with New Team (Individual Project) – If any member is failed, detained or joining any other group.

Team Registration Requests

Sr. No	Project Name	Team Members	Status	Semester	Action
1	Improving The Power Factor In Industry By Engaging APFC Unit	Patel Krunal Amrutlal Pandya Jigarkumar Bipinchandra Chaudhari Savankumar Dhirubhai Bariya Yoginiben Vipinbhai	Approved	Semester 7	View Details

Do you want to continue semester 7 project in semester 8 ?

Select Option to continue with Semester 7 : Yes No

Selected Option: Old Team New Team

Project Type: Individual Project Team Project

[TEAM REGISTRATION](#)

GTU INNOVATION COUNCIL (GIC)

CASE 3: Old Project with New Team (Team Project) – If any member is detained, removed or newer member is been added to the group who was not been present in team during earlier semester.

Team Registration Requests

Sr. No	Project Name	Team Members	Status	Semester	Action
1	Improving The Power Factor In Industry By Engaging APFC Unit	Patel Krunal Amrutlal Pandya Jigarkumar Bipinchandra Chaudhari Savankumar Dhirubhai Bariya Yoginiben Vipinbhai	Approved	Semester 7	View Details

Do you want to continue semester 7 project in semester 8 ?

Select Option to continue with Semester 7 : Yes No

Selected Option: Old Team New Team

Project Type: Individual Project Team Project

Reason for Team Change : Any team member is either detained or removed
 Other

TEAM REGISTRATION

CASE 4: New Project with Old Team – Same team as of 7th semester is working on newer project during 8th semester, with no change in team members.

Team Registration Requests

Sr. No	Project Name	Team Members	Status	Semester	Action
1	Improving The Power Factor In Industry By Engaging APFC Unit	Patel Krunal Amrutlal Pandya Jigarkumar Bipinchandra Chaudhari Savankumar Dhirubhai Bariya Yoginiben Vipinbhai	Approved	Semester 7	View Details

Do you want to continue semester 7 project in semester 8 ?

Select Option to continue with Semester 7 : Yes No

7th semester project is completed and working on new project
 Company is blacklisted/closed/changed
 Other
 Project definition is not enough for continuation in 8th semester

Reason for Project Change :

Selected Option: Old Team New Team

Sr. No	Enrollment No.	Name	College	Department	Mobile No.	Email
1	120410109044	Patel Krunal Amrutlal	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	9723473390	krunalp312@live.com
2	120410109021	Pandya Jigarkumar Bipinchandra	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	7383735076	jbpandya911@gmail.com
3	120410109032	Chaudhari Savankumar Dhirubhai	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	9925562425	savanchaudhary28@gmail.com
4	120410109035	Bariya Yoginiben Vipinbhai	Sardar Vallabhbhai Patel Institute Of Technology, Vasad	Electrical Engineering	8511184835	yogini774@gmail.com

TEAM REGISTRATION

CASE 5: New Project with New Team – If any member is detained, removed or newer member is been added to the group who was not present in team during earlier semester.

Team Registration Requests

Sr. No	Project Name	Team Members	Status	Semester	Action
1	Improving The Power Factor In Industry By Engaging APFC Unit	Patel Krunal Amrutlal Pandya Jigar Kumar Bipinchandra Chaudhari Savankumar Dhirubhai Bariya Yoginiben Vipinbhai	Approved	Semester 7	View Details

Do you want to continue semester 7 project in semester 8 ?

Select Option to continue with Semester 7 : Yes No

Reason for Project Change :

- 7th semester project is completed and working on new project
- Company is blacklisted/closed/changed
- Other
- Project definition is not enough for continuation in 8th semester

Selected Option: Old Team New Team

Project Type: Individual Project Team Project

Reason for Team Change :

- Any team member is either detained or removed
- Other

TEAM REGISTRATION

Primary set of rules for student's project team formation in 8th semester

1. Team will be formed based on the answers of the set of questions submitted by student.
2. Once any student submits Project Request (Team Registration) with submitting team member details, then those set of questions will not be visible to the respective team members/team leader. But if the project requests is **rejected**, then set of questions will be visible to respective team member/team leader.
3. If student selects **Old Project with Old Team**, then project details (Project Title, Abstract, Internal Guide, HOD, Principal, etc.), team members and team leader will be same as earlier (7th semester) and cannot be altered.
4. If student selects **Old Project with New Team** (Individual or Team Base), then student cannot change any project information details (Project Title, Abstract, Internal Guide, HOD, Principal, etc) but can make change in team member details.
5. If student selects **New Project with Old Team**, then student cannot change any team member or team leader details but can make change in project details.
6. Student can select only 8th semester students (**a.** those who had generated completion certificate and then moved to 8th semester in PMMS, **b.** those who have not generated completion certificate please refer: Guideline for student's movement from B.E. 7th semester to 8th semester available in this document) as his/her team members and team leader. This rule is applicable on all options of Team Formation (New Project and Old Team, Old Project and Old Team, New Project and New Team, Old Project and New Team).

7. If the team is formed, then no team member of that team (including team leader) will be able to submit Team Registration Request.
8. During team registration, student cannot add any team leader/team member (of other Approved Project Request) as a part of his/her Team.
9. Team leader cannot be the part of multiple Pending Project Requests, but any team member can be the part of multiple Pending Project Requests.
10. Considering point (8), if any team member is a part of multiple Pending Project Requests, then he/she has to choose one Team. Only after that, Internal Guide or HOD or Principal can approve those project requests.
11. During team registration, if team leader selects Interdisciplinary option, then he/she must have to select at least two internal guides. This process rule will only be applied in the case of new project option during team registration.
12. Team cannot select the same person as internal guide and external guide both.
13. During team formation, team can select HOD and Principal as their internal guide.
14. During team formation, detain and UFM students are restricted to be part of any team.
15. Each team will have unique team id.
16. In any case, whenever team is formed, it will be assigned new team id.
17. The students who have been moved to 8th semester through university PMMS team and had not formed team in 7th semester, will not be allowed to create team with below options:
 - Old Project with Old Team
 - Old Project with New Team
 - New Project with Old Team

For those students who are detained in 8th semester earlier and they are relived while upcoming 8th semester tenure, will have to contact respective HOD or Principal and have to request for their PMMS registration (Student registration for detained students) from their respective PMMS account.

Once their student registration is done manually, they will be able to form team. However, they will not be allowed to create team with below options as they have not performed any past project and were not be the part of any team yet:

- Old Project with Old Team
- Old Project with New Team
- New Project with Old Team

14. Suggestion for Evaluation of Projects (For Internal & External Examiners)

In order to justify the attempts of the B.E. Semester 7th & 8th students for their first ever attempt to implement IDP at GTU, Faculty members and external examiners are requested to refer following suggestions for evaluation of Project.

- Students are to be evaluated for their innovative ideas, however small, it can be and not for size of the project. A semi-finished project done properly may fetch more score than fully finished ordinary project works.
- Basic understanding of student for project and related methodologies for its implementations need to be analysed, using your expertise.
- In case of students, who have fully implemented their project in B.E. they are to be encouraged. Also discuss future scope of update/modifications to current project, which can be taken up in coming academic year by upcoming batch of students.
- If project is not fully implemented, you are requested to provide inputs for their future implementations and availability of various sources to help them.
- If students have not reached to significant level in project then please analyse the causes for the same and report to university in feedback form for the Project, with your comments.
- Students are required to show case a proto type/proof of concept of their efforts in contextual branches in possible cases depending upon the feasibility and cost.
- Both external and internal examiners are required to evaluate students for final year project examination with equal weightage.
- Industry mentor from particular project or mentors from industries related to the area of project may be invited for final project examination nominated by council of deans.
- Examiner is required to note specific innovative projects during examination and mention in feedback from which are useful to MSMEs, particular user or society in large. University will recognize such innovations and appreciate the teams to encourage them and the coming generations.
- If the team has taken projects from any user like industries, expert faculty or similar sources verify the joint efforts of students and see whether students have interacted with them and documented the works properly throughout year.

15. Annexure 1: Letter format for students who had not generated completion certificate during 7th semester *

College Letter Head

Date:

**FOR FINAL YEAR B.E. STUDENTS WHOSE 7TH SEMESTER PMMS ACTIVITIES
WERE NOT FINISHED ON PMMS PORTAL**

To,
Gujarat Technological University,

The following student(s) _____, having enrolment number(s) _____ has/have not timely finished the PMMS tasks on portal and hence completion certificate was not generated, during 7th semester. College faculty _____ working as (designation) have checked and ensured for completion of all PMMS activities in physical mode and allowing for 8th semester project work.

College Name & Code:

Department:

Project Title:

Faculty Name, Designation & Signature
(Who had checked all details)

HOD Name & Signature:

College Seal

***Note:** Students are required to submit the scan copy or photo of this document on official letter head of college with filled details, via email to s4@gtu.edu.in. Mention the subject line as “Annexure: Letter format for students who had not generated completion certificate during 7th semester” – **This note is not required to be printed on letter head.**

16. Annexure 2: Industrial Shodh Yatras (ISYs) Steps & Final Year Projects

Guidelines for Final Year B.E. students - For finalizing the Problem Definitions of their Final Year Projects

REFERENCES:

- Regarding IDP/UDP activities and its time line, please refer to http://gtu.ac.in/circulars/15May/13052015_11.pdf
- Regarding FAQs related to IDP/UDP please refer page 2 -5 of http://www.gtu.ac.in/circulars/12July/19072012_01.pdf Or page 2-4 of http://www.gtu.ac.in/circulars/14Jul/07072014_01.pdf

Note: It is suggested that the GTU Innovation Club must be activated in every College/ Institution, if it is not in activated mode. The club membership includes one faculty member from every branch. This faculty member of the GTU Innovation Club may be called the Branch Coordinator of the particular college. The branch coordinator will keep track of the above process in coordination with students and Faculty Guides.

The Concept of IDP and UDP: Every student of GTU is creative enough to solve real life challenges.

The students are required to form teams of 3-4 students (the team size vary depending upon the project type, hence there is no any restrictions on team size) for working on their final year project. With the guidance of a Faculty Member, they will start working to find a problem, the solution of which would constitute their final year project. The problem may be found by studying the products or processes of an industry through a Shodhyatra. A project based on such a problem is called an **Industry Defined Project (IDP)**.

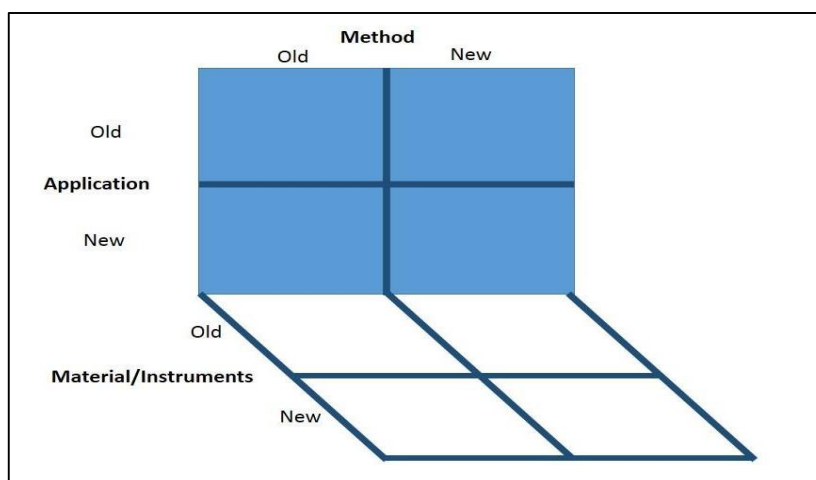
Alternatively a project may be based upon the needs of NGOs, informal sectors, Govt. organizations and society at large. Students can take a research problem identified by the Faculty Members or it could be the idea of student, which is approved by the Faculty Guide. Such a project is called a **User Defined Project (UDP)**.

Note: If some projects need more than 1 year to reach to a stage of final product (ready to be used), the teams and guides can carry on the same project from previous year, in subsequent years, exactly from where it had been left by the previous teams. GTU believes that in such iterations and cycles, many final year projects can become useful products for end users.

WHAT IS AN INNOVATION?: It has been suggested that, if one codified a particular challenge in a particular environment and tries to make new interventions, either in material, method or application, then it can lead to an innovation.

“Conceptually, any innovation implies substantial improvement in the ways of doing things, producing goods or providing services. It may involve a new use of an existing resource

or producing (or delivering) existing goods or services through new methods (or new instruments/materials)” (Gupta, 1992)



To develop inclusive innovations, one needs to develop solutions pertaining to a specific challenge and look for how he/she/they can develop interventions which can cater to a different (a) space (b) sector (c) social engagements (d) skill sets and knowledge.

Action Points for Colleges/Institutes and for Students

Phase I (Pre IDP/UDP exposure program)

(Within 10 days after completion of 6th semester exam)

In this phase, the Institute/College needs to explain to their students the basic idea of IDP/UDP. Colleges/departments need to explain the entire innovation cycles, the IDP/UDP lifecycle, necessary steps needed and other guidelines. Such an exposure/literacy/sensitization program may be arranged in any 2-3 days after their 6th semester exam is over by the respective department/college. (Leaders: Some of the colleges have taken the lead by organizing such training during the sixth semester, during the week-ends.) The program may also contain briefing about interventions by the University. GTU’s Student Start-up Policy and various aspects about innovation and its impact. The program should motivate and encourage students to innovate through their final year project.

Refer- http://gtu.ac.in/circulars/15May/13052015_16.pdf

Phase II (Industrial Shodh Yatra: ISY)

(Within the period of summary vacation (one month), before start of semester seven)

The students are required to form teams of 3-4 students (in general) for working on their final year project. With the guidance of faculty members they will start working towards Industrial Shodh Yatra (ISY) to define a problem statement on which they will work for their final year project.

Students team needs to identify the domain (area of work) in which they would be interested in working during their final year project in consultation with stakeholders like faculty members, industry persons, experts etc. Students need to interact with multiple set of users while sampling the inputs while defining the IDP/UDP.

Keeping in mind their domain of interest, the group shall identify local industries or workshops/users. One group should visit 3-4 such identified places to visit and adopt suitable measures based on design thinking to locate a challenge. After the first visit, the group shall return and discuss their experience and primary findings with the faculty guide and the rest of the groups and peers in the class and outside stakeholders for inputs.

The visit to industries for study of a product or process is called an Industrial Shodh Yatra (ISY).

Notes:

- ISY is beneficial for all students whether they want to work upon an IDP or a UDP. After ISY students need to decide with the guidance of their faculty guide whether to select an IDP or a UDP.
- When the academic session starts, the visits to industries should be done so that the academic schedule is also adhered to fully.

Phase III Organization of workshops for different design canvases

(Please read AEIOU Framework for Observation Activity as mentioned in subsequent pages before reading following paragraph)

The Institute/College will arrange workshops for different design canvases like Empathy, Ideation and similar design thinking practices. All student-teams are required to participate in the workshops, involving whole of the class and prepare necessary documents. Students' teams need to summarize AEIOU framework activity for observation part in Empathy phase. Then they need to document scouted challenges along with user's need with the help of Mind Mapping technique for better understanding. After discussion with Faculty Guide and other groups, the final problem statement has to be defined by clearly mentioning the user's need and problems faced in the domain. All teams need to validate their problem statements with its users.

Every student-team should fill up the data in the Empathy Canvas (in A1 sheet) by noting down all insights from inter-action with the user. Thereafter, each team will present their canvas in a mini-exhibition format. During this mini-exhibition session, the corresponding users, may be invited. Each team of students is required to take photograph of each canvas/framework/poster and store its soft copy of documentation. As per university circular, each team will upload their data online at the university PMMS portal: <http://projects.gtu.ac.in/>

Four-Step Process for Defining a Final Year Problem Statement

STEP 1: Scouting for the problem

(Within the period of summary vacation (one month), before start of semester seven)

STEP 2: Secondary Research/ Prior Art Search

(During first month of semester seven)

STEP 3: Problem Definition

(During first month of semester seven)

STEP 4: Registering onto PMMS portal by GTU

(Before end of first month of semester seven)

STEP 1: Scouting for the problem - The problem may be found by studying the products or processes of an industry through an **Industrial Shodh Yatra (ISY)**. A project based on such a problem is called an Industry Defined Project (IDP). *(As per details mentioned under **Point 1 and Point 3** in following pages)*

Student teams will be using **AEIOU framework** for the observation activity. *(As per details mentioned under **Point 4** in following pages)*

AEIOU stands for Activity, Environment, Interactions, Objects and Users. Hence every team needs to observe for these basic elements in their selected domain. This framework will help to decide unarticulated needs of users. Students need to go through the process of Observation, Immersion (role playing) and engagement (interview) to get their requirements for the projects.

STEP 2: Secondary Research/ Prior Art Search - Students team need to search for patents and other related literature for their selected problem statement to check the already existing ways to solve similar problem and to find out about existing similar innovations. The team needs to upload Patent Search & Analysis Report (PSAR) on the Project Mentoring and Monitoring System (PMMS) in due course. Please see the detailed description in this document about steps for secondary research/PAS. *(As per details mentioned under **PSAR activity** in earlier pages of guideline, and **Point 2** in following pages)*

STEP 3: Problem Definition - Final scouting through Diachronic and Synchronic analysis: After primary observations, the team of students shall perform Diachronic and Synchronic Analysis of the product/system/process being examined. *(As per details mentioned under **Point 5** in following pages)*

Every team of students needs to discuss their visit of Industries with the faculty guide and with other groups by using the diachronic and synchronic analysis methodology and by preparing images/charts/diagrams for explaining flow of ideas clearly. The problem statement, to be defined, shall be based on the user study and needs, role play, observation, empathy, primary prior art search and understanding of the macro system, etc.

By the process of observation, immersion and engagement (*As per details mentioned under Point 4 in following pages*)

students would be able to understand the problem of industries/users whether the problem/possible innovation is in form, feature or function and/or material, method or application. After the observation, the perception of the team of students for the problems may change or even differ from the previous one. And from those inferences students need to define their final problem statement after iterative analysis again and again. Each team needs to frame a precise problem definition, after understanding all the necessary aspects of the problem.

Group discussion/presentation with faculty guide and other teams and stakeholders: After the industry visit, prior art search, diachronic & synchronic analysis and other design thinking practices, each team needs to discuss their activities and about their scouted challenges from industry with the faculty guide and other groups in the class. On the basis of further discussion and inputs, the team needs to define the exact problem statement for which they will be working during Final Year Project/IDP/UDP. Problem identification by the group members is overlapped by the problem identification by the user/s and the problem identification by the various stakeholder/s other than them. On the basis of all these inputs the final and precise problem statement is generated.

STEP 4: Registering onto PMMS (Project Mentoring and Monitoring System) portal by GTU: - By 30th July, every team must register themselves through online portal called PMMS by giving the title of the project, the names of the team members and name of the Faculty Guide. For an IDP, the name of the industry and the Industry-Mentor for an IDP must also be specified. GTU has created this IT tool so that the mentors can work along with the faculty guides and students to help make the project better. This platform will also track progress and challenges in every 15 days and will keep the faculty guide, students, and the external mentors connected.

Point 1: Notes on Scouting for the Problem

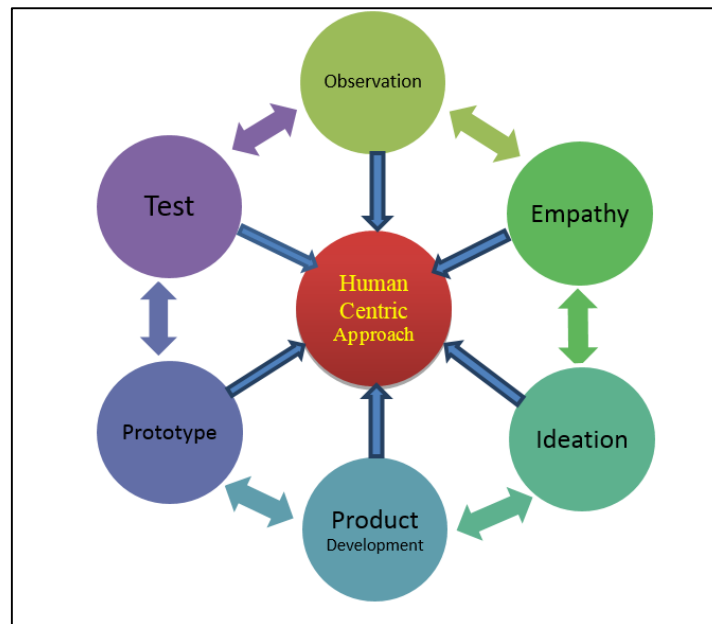
STEP 1.1 Scouting for the Problem: METHODOLOGY OF DESIGN DRIVEN INNOVATION (DDI)

An engineer is a problem solver and as such he/she has to inculcate the process of thinking as a designer to develop new products or processes. Every team of students should use the methodology of Design Driven Innovation for their project. This Design Driven Innovation process is based on Design Thinking Approach.

“Design Thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.”
—Tim Brown, President and CEO of IDEO

Design Thinking can be applied to solve all kind of problems from the simplest to complex problems. Design Thinking is a mind-set that is possibility driven, Option focused and iterative. This can be divided into six interactive as well as iterative steps shown below. Each

steps of design thinking involve rigorous and interactive efforts from defining a particular problem to deploy the solution in the market. Every step would involve iteration to check the idea/solution with the previous one to move forward.



Design Thinking - Human Centric Approach

STEP 1.2 Immerse: Role Playing

In this activity a student need to become the user and actually live their experiences. During this process the innovator needs to envisage him/her as the user of the desired product and identify, codify various needs from his/her perspective. During the immersion process, students and their Guide can get insights about the non-codified and undocumented needs of the contemporary user/industry.

Being the user and primary problem identification:

The group shall be divided into two: Few members will be 'role-playing the users' and identifying the problems by first-hand experience and the rest of the group members will be video-graphing the interviews (primary users, secondary users, stake- holders, etc.) The group members that would be role-playing are encouraged to perform the function of users in the industry they had visited. For example, for problem identification in a steering wheel of a car, the group must learn how to drive a car and understand how the steering wheel is being used and in how many different ways it can be used. The members that would be video-graphing are to record the videos at high FPS (frame per second) to enable them to view the videos in slow motion at a later stage for reference and better understanding.

The other group members will interview the entire bandwidth of stakeholders. For example, while identifying the problems pertaining to the steering wheel, the stake holders would include the car manufacturer, distributors, mechanic, driver, owner, various vendors (leather, nylon, adhesives, etc), various people on the shop floor or assembly line that assemble the part into the car, etc.

A visit to 3-5 places would help the group identify the problem process or area along with identifying the minor deviations that are there in each factory to suit their individual needs. This also helps the group to understand how any process can be customized to suit needs and increasing either comfort of operation or final output. This also introduces the group to frugal innovations and its practices, that India masters.

Another technique of understanding the needs and persona of the user and the stakeholder is noting the 'personal inventory' of them. It is a method of understanding the user and stakeholders by recording what other products/items they use. For example, if the user's inventory records are a pair of RayBan shades, a DSLR camera, a tripod, a pair of extra macro lens, a leather wallet, power bank, brass keychain, a deodorant, an aftershave lotion, etc.

The inference can be drawn that the user is a person that is extremely organized, uses branded products, is passionate about photography, likes to drive, etc. It also gives a hint of the purchasing power of the user and stakeholders and helps in product placement and bench marking of the products (Image: Personal Inventory of an Artist http://36.media.tumblr.com/04f88f01e46d2b0e06f5c1eef85808bb/tumblr_mpbwrzhlvK1qz9v0to2_1280.jpg).

STEP 1.3 Engage user by Interview technique

Interact and interview users through both scheduled and short "intercept" encounters. Prepare the set of questions to be asked to the same industry workers/executives/stake holders for thorough research. Some guidance is given in the link which describes different methods for interviewing and observation from Stanford University (<http://dschool.stanford.edu/wp-content/uploads/2013/10/METHODCARDS-v3-slim.pdf>) on how to formulate questions to get the most relevant answers and how to verify/validate the same. Interviews are to be video-graphed, hence necessary equipment to be carried along with the study as and when required.

Getting out of the building and actually talking to your users is probably uncomfortable but potentially most effective way, if it is done in the right way. The thing here is not to directly go up and ask your user for the solution because most of the time they really don't know about the solution and even about the problem. Engage them in conversations that allow users to tell stories of their experiences and a likely solution.

Point 2: Notes on Secondary Research/Prior Art Search

STEP 2: Secondary Research/Prior Art Search:

(For increasing the innovation quotient of each of your IDP/UDP)

PAS: Prior Art Search activity: what it includes:

1. Web search/research publication
2. User feedback
3. Patent search (PSAR)
4. Vendor/market search

During this Patent Search and Analysis Report (PSAR) generation activity, every student within a team has to study at least 5 patents related either to his/her IDP/UDP or related to his/her area of interest. Analysed data of each of these five patents is to be submitted online at: <http://projects.gtu.ac.in/> , along with the project progress details, once the university declares the due date for the same. The team needs to compile the findings of each member during PSAR and make a report on:

1. What are the other solutions already existing and what are specific patent claims solving particular need or adding value related to your project?
2. How does the team wish to improve existing patent claims by their own project?
3. What would be new value addition/distinct feature the team will add to ensure their solution becomes unique and novel?
4. Which innovator/industry has already started working on improvements, the like of which you have taken up as your Final Year project? This will let the team understand the orientation of future research in academia. The academic R&D can be streamlined by tapping such data where industry aspires to build product/process which is going to come to market in future.

Prior Art/ Literature search is the step after gathering primary data from the domain/field and to begin any project. Many of the students have been developing novel solutions, but quite often they are not aware about the Intellectual Property Rights (IPR). Some of their solutions are quite unique and might fulfill the criteria of patentability. Student teams need to search related literature for selected problem product/process/system through patent database, literature review, market search/user interaction. Every team can search the relevant literature using various search databases (for web and patent search) by entering the key words with combinations of Boolean characters and/or wild characters. As patents are one of the most important aspects of Prior Art Search, some of the online free databases are listed below for reference:

Search Databases	Web link	Scope of search
Google's Patent Search	http://www.google.com/patents	US patents only
USPTO	http://patft.uspto.gov/	US Patents only
EPO	http://ep.espacenet.com/?locale=en_EP	- EP Patents - WIPO patents - Worldwide patents
Patent Scope (WIPO)	http://www.wipo.int/pctdb/en/	WIPO Patents
Indian Patent Office	http://ipindia.nic.in/patent/patents.htm	Indian Patents (Granted as well as 18 month Published Patents)

PAS helps one to understand what has been done/attempted before. This enables innovators obtain ideas on which he/she should work further.

Point 3: Industrial Shodh Yatra – In Greater Detail

Final year project: Final Year projects are the capstone of engineering education. After going through technical subjects during their studies, the young brains have the necessary background and have learnt how to acquire technical knowledge for solving real life challenges. The work on the Final Year project helps a student integrate the knowledge, from various courses that he/she has studied, for solving a problem.

GTU wants the projects to be socially relevant and/or to be able to meet industry's requirements.

The users of an engineering product or process may be MSMEs, Large Scale Industries, Informal Sectors, Expert Individuals or Institutions, NGOs etc. GTU requires that each team of students should interact with the user of their choice and map the unarticulated needs of respective users. The need may be for improving a product or a process. or it may be required to develop a new product for satisfying the need. The team of students will develop the improved or a new product/process as their Final Year project, with the approval of the Faculty-Guide.

Industrial Shodh Yatra: Industrial Shodh Yatra (ISY) is the course of action that leads a team of students towards a creative interaction with diverse users to discover a challenge/problem, the solution of which would lead to a better product or a more efficient process for a particular user or for a group of users or an industry. The suggested innovations may be incremental or disruptive.

In this process of ISY the team members are required to follow design thinking approach and define a problem statement through the process of observation, immersion and engagement. During an ISY, a team of students, accompanied by their faculty guides, are required to interact with one (or more) industry/user and adopt a systematic approach to document the opportunity of improvement or of finding a new solution.

Generally an Industrial Shodh Yatra is organized by a College/Institution or by a Head of Department (HOD)/by a Faculty Member. A team of students visit an industry and spend some time to study the products and processes of the particular industry and to have technical discussions with the personnel at the industry. The visit may conclude in discovery of an appropriate problem for the Final Year project for the team of students. The concepts of IDP/UDP and ISY were defined by GTU in 2010-2011.

Objectives of Industrial Shodh Yatra (ISY):

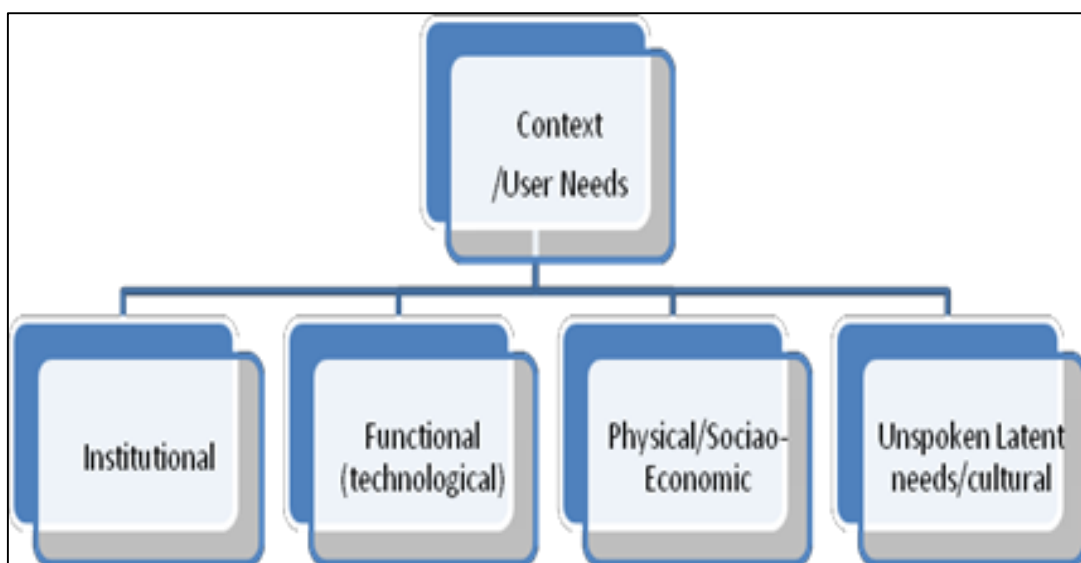
1. Forging linkages between Industry-Academia
2. Mapping real -life need of users/MSMEs/Industry/Others/Innovators
3. Codifying scouted challenges with the help of industry
4. Scouting innovations done by MSMEs and benchmark them with respect to global solutions
5. Mapping the Gap & converting it into final year projects as a part of Academic Research
6. MSMEs can leverage final year students as a skilled technical Human Resource for technology development, while students will get learning opportunity. This is

particularly helpful to MSMEs since they may not be able to afford their own full-fledged R&D facility.

- Using design thinking approach for developing incremental innovations for existing products or processes by doing innovations in form/feature/function and/or material/method/application of product. This process is called Design Driven Innovation (DDI).

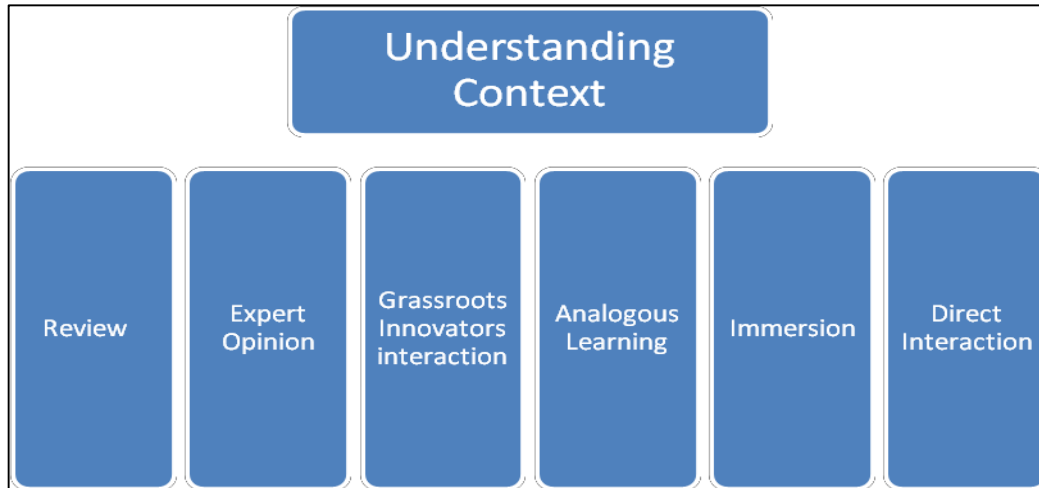
Whether a student chooses to take up an IDP or an UDP, the Final Year project should use the approach of Design Driven Innovation. This will make the work on the Final Year project interesting and educative, leading to the graduation of an engineer, who may be able to face the challenges of designing new products or processes successfully.

Steps in Industrial Shodh Yatra (ISY):



ISY involves two of the six steps (given in the figure on design thinking): “OBSERVATION” and “EMPATHY” only. The team of student should go through the steps of “OBSERVATION” and “EMPATHY” by a systematic process, even though an external user like a specific industry may not be available in case of UDP. Student needs to define the exact parameters, context and the situation that will lead to the solutions pertaining to a particular problem. For this we need to define the user needs.

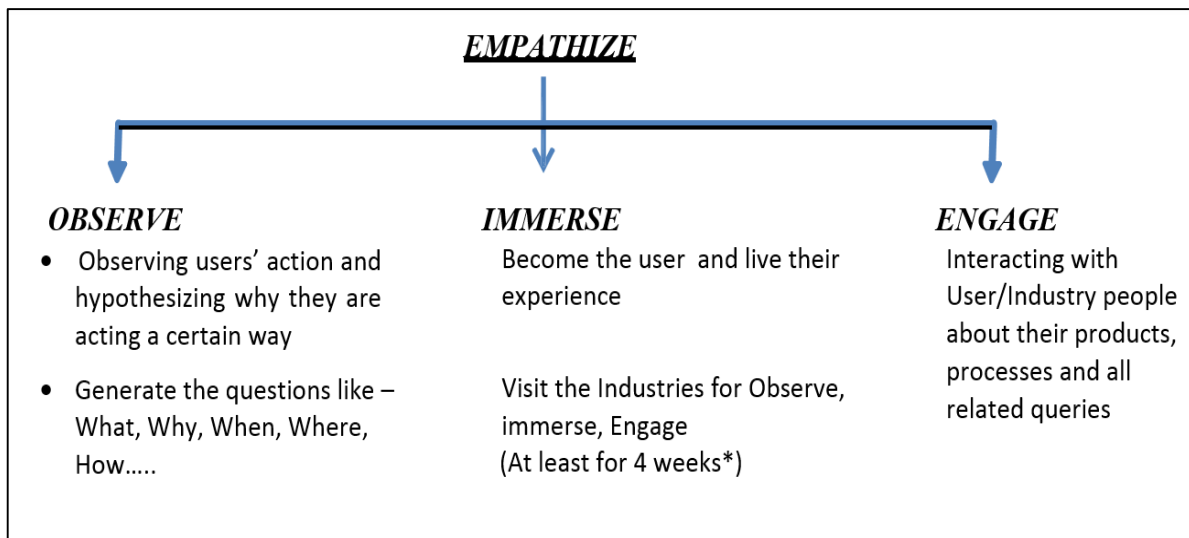
First students have to define all the parameters and then they need to take some specific cases to understand these. The latent needs can be better understood only when we interact with the user. This includes observation as well as detailed discussions with the community of users.



The user needs and context can be understood through the following parameters defined in terms of the needs and context: functional aspects, physical aspects, latent needs and institutional aspects.

Empathize:

To Empathize the User, one needs to observe again and again. For better Empathy of User, students need to follow the following steps of Observe, Immerse and Engage.



Point 4: Aeiou Framework for Observation Activity

STEP 1.1 Observation: With the help of AEIOU framework

Student teams will carry out the observation activity for their selected domain/industry with the help of AEIOU Framework. AEIOU is an investigative tool to help a designer to interpret observations gathered by ethnographic practices* in the field. It is an Observation tool. "Its two primary functions are to code/gather data, and to develop building blocks of models by analysis of data that will ultimately address the objectives and issues of a client/user." The groups of students are requested to divide the work amongst each other for AEIOU framework.

For format of the AEIOU canvas, please refer canvases as mentioned under Design Engineering - Canvas Activity.

References:

- Regarding AEIOU theory, please refer to:
http://gtu.ac.in/circulars/15Apr/04042015_AEIOU.pdf
- The AEIOU framework was originated in 1991 at Doblin by Rick Robinson, Ilya Prokopoff, John Cain, and Julie Pokorny. Its aim was to help analyze Ethnomethodology data and Conversation analysis with MECE categories. You may refer it from the following websites:
http://www.drawingideasbook.com/images/AEIOU_worksheets.pdf
<http://www.doctordisruption.com/design/design-methods-8-aeiou/>
- Ethnohub: <http://help.ethnohub.com/guide/aeiou-framework>, accessed on 16 May 2015
- <http://en.wikipedia.org/wiki/Ethnography>

Observation Technique:

1. *What is user/person (or users/persons) doing?*

-What is the user/person you're observing doing in a particular situation? Note the obvious as well as the surprising and random activities. Just report the objective facts.

2. *How are they doing it? (Body Language, posture, style etc.)*

-How is he doing it? Does it require effort? Does he appear rushed? Pained? Happy? Sad? Is the activity impacting the user in either a positive or a negative way?

3. *Why are they doing it in this way?*

-Why is he doing what he's doing, in the way he's doing it? This step usually requires that you make informed guesses regarding motivation and emotions. This step will reveal assumptions that you should ask users about, and it will often uncover unexpected realizations.

General Information:

- Information/Data are gathered via ethnographic methods: notes, photos, videos, interviews, field observation, etc.
- During field observation, use the AEIOU framework as a lens to observe the surrounding environment.
- Record observations under the appropriate headings.
- Supplement direct observations with photos or video tape when appropriate.
- Review and cluster observations to disseminate higher-level themes and patterns.
- A,E,I,O,U individual analysis can be done in A3 paper but the whole AEIOU summary canvas to be A1 size canvas.

Point 5: Diachronic & Synchronic Analysis

STEP 3.1 Diachronic and Synchronic Analysis:

Diachronic analysis means the analysis of how a particular activity has been performed since thousands/hundreds of years ago. This is better studied by plotting it along a timeline. For example: How forging was done in renaissance era to how it changed during the industrial revolution, how it is done in modern times and how it is being done with the help of robotic arms. Identify the changes in process and tools and why those changes were adopted. Refer the images of Diachronic Analysis for Mobile phone/Communication Device in the given link: <http://ig.computersciencedegreehub.com/evolution.jpg> and <http://www.designinfographics.com/infographics-images/evolution-of-the-cell-phone-the-worlds-gone-crazy.png>

Synchronic analysis means the analysis of how a particular activity is being performed in various other parallel industries. Activities similar in action like forging. Refer the images of Synchronic Analysis for Mobile phone/Communication Device in the given link: <https://drive.google.com/open?id=0B4o8FlssBX7BNTFGUDBWVmdzQ00&authuser=0>

In general, diachronic analysis relates to the way something changes (or doesn't) over time and why. Synchronic relates to the way something is used at a certain point in time but in different contexts (Students must observe the constants and the variables). The groups stay in the college/institute and generate their prior art search data and primary diachronic and synchronic analysis.

GTU believes that by thoroughly crafted policies, processes, incentives and real-time mentoring and quality benchmarks, at least 1000 student projects can become useful products every year. Some of these innovations can possibly become successful technology start-ups or get transferred to MSMEs who in turn can use them for improving their productivity and create value.

17. Contact Us

For any query/issue/problem, while communicating to GTU please share you're following details: Name, Enrolment Number, Team Id, Email Id and Contact Number along with proper description of your problem.

For any further query you may contact us at:

QUERY RELATED TO	CONTACT MAIL ID
IT related issues	s4@gtu.edu.in
PSAR/PDE IPR/Patent	ipr_projectofficer@gtu.edu.in manish.rachchh@gtu.edu.in
Entrepreneurship & Design Engineering canvas activity.	ap_karmjitsinh@gtu.edu.in

Note:

While every efforts has been made to ensure the correctness of the contents of this guideline, any error(s)/deviation(s) noted may be brought to notice of Mr. Amitkumar Patel, Assistant Professor (IPR/Patent), at "ipr_projectofficer@gtu.edu.in" for corrective measures.