Gujarat Technological University

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Final Year Guidelines for IDP/UDP for Academic year 2016-17
Weekly Schedules for various phases

BE 7th Semester Project work

Sr. No.	Phases	Key Activities	Time Line (in week)
1.	**Phase-1** Pre IDP/UDP Exposure program	(a) Explaining the students about IDP/UDP lifecycle and necessary awareness ✓ Colleges/departments need to explain/revise entire innovation process based on Design Thinking, basic idea about IDP/UDP lifecycle, necessary steps needed and other guidelines ✓ Arrange such exposure program for 2 days of first week of semester by department/college and explain various interventions by University toward final year IDP/UDP. ✓ Briefing about innovation value chain and various aspects about innovation and its impact so that students can innovate through their final year project.	1st week of semester
2.	**Phase-2** Industrial Shodh Yatra (ISY)	(a) Scouting for the Problem ✓ Selection of Domain/Industries/Area of Interest for Project ✓ Observation/Studying the products or processes for selected domain to find out unmet needs of users ✓ All activities via AEIOU and similar framework for the observation activity. Empathization process around particular challenges to figure out project definition. ✓ Discussion of experience of ISY with faculty guide and other groups. ✓ One should allocate enough time for Observation/field work to empathize user well ✓ Prepare AEIOU, mind map and Empathy map for the insights gained from field work	2nd to 5th week

Sr. No.	Phases	Key Activities	Time Line (in week)
		(b) Secondary Research/Prior Art Search (PAS) ✓ Search for patents and other related literature for selected problem (PSAR) ✓ Literature review/Web search/research publication ✓ User feedback ✓ Vendor Search/Market Search ✓ Analysis of existing Technology Start-ups (University will further share data with departments to help this)/Trend analysis	6th Week
		(c) Problem Definition ✓ Identification of problem/s related to selected domain through Diachronic and Synchronic Analysis and similar design thinking approaches. ✓ Defining the Problem Statement from all above exercise (on the basis of Observation and Empathy of user) Empathy summarization. ✓ Frequent interaction with faculty guide with multiple iterations is required. ✓ Try to define the exact challenge in the user's context/problem context/socio ecological context etc. ✓ Look for various alternatives as solutions in different combination of material, method and application.	
		(d) Registration of problem statement, team etc. into online PMMS tool	
3.	**Phase 3** Ideation and project planning	(a) Implementation Strategies Selection of Proper Tools/Techniques for Implementation, project planning for the IDP/UDP with clear mile stone.	7th to 10th week

Sr. No.	Phases	Key Activities	Time Line (in week)
		(b) Ideation Process ✓ Preparation of ideation Canvas (for exploring innovative idea for Problem Statement) ✓ Ideas need to evaluate with faculty guide and industry mentor. ✓ Ideas should be presented in drawings/sketches/mock ups (can be made from thermocol, paper, clay or any other materials to simulate and check primary concepts) ✓ Think about solutions/ideas for different context, geography, demography, usage around the same challenge or similar. ✓ Look for any incremental innovation either in form, feature or function related to your challenge if it can satisfy the need or check for any altogether disruptive idea to serve the purpose.	
4.	**Phase 4** ***MVP-1*** (Minimum viable Prototype Development) Proof of Concept Stage	✓ Define and discuss aspects of product/process like Form, Features, Functions, Components/Parts, Material, Manufacturing Processes etc. via Product Development Canvas ✓ Technical knowledge acquisition to implement the project. ✓ Actual efforts for making the proof of concept ✓ Phase 3 and 4 will be iterative so that one can develop better proof of concept after critical insights from earlier stage and vice versa.	11^{th} & 13^{th} week
5.	**Phase 5** Potential customer validation/User feedback and implementation	✓ Team need to validate MVP/product/process through Customer/User. ✓ On the basis of the feedback from User team will work on Redesign/Reject/Retain phase. (Iterative Process-can be repeat several times depends on feedback) ✓ To make working prototypes wherever possible or at least make those parts which are relevant to the innovation in priority.	14^{th} week (Completion of 7^{th} Sem project work)

Sr. No.	Phases	Key Activities	Time Line (in week)
6.	**Phase 6** Report making and real time PMMS updating with all Periodic Progress Report (PPR)	✓ All groups need to submit their final project report in the format given by University by Term end. ✓ Real time updating in their project blog by each team and implement mentor's suggestions in real time basis throughout the semester.	Till Term End
7th Semester IDP/UDP examination			

N.B. Those students who will finish the projects in 7th semester need to implement all the steps of 7th semester first as mentioned above for their 8th semester projects along with the 8th semester project requirements as given below.

If the teams would carry forward their 7th Semester project ahead to 8th Semester, then they need to follow the below given steps to take their project ahead and achieve the desired goal.

BE 8th Semester Project work:

Sr. No.	Phases	Key Activities	Time Line (in week)
1	**Phase 7** Project planning for 8th Semester/implementation strategies	✓ Planning for the project work with timeline and milestone for entire work in 8th Semester and execute them. ✓ Technical knowledge acquisition to implement the project. ✓ Actual efforts in taking the proof of concept to prototype stage. ✓ Frequent interactions with faculty guide/industry mentor/user with multiple iterations are required.	During first two weeks of semester

Sr. No.	Phases	Key Activities	Time Line (in week)
2	**Phase 8** Business Model Canvas(BMC) & other product and market validation tool & Developing Minimum Viable Prototype ***(MVP-2)***	✓ This step will be performed to ensure that the research or project being attempted in the final year is in right track to meet its deliverables. The feasibility, viability and similar aspects will be tested while the ongoing project will still be going on to further refine the proto-type. ✓ Furthering the prototype after various iterations while implementing various feedback and insights obtained from BMC and other exercises. (For research oriented projects where BMC may not be appropriate student teams can skip BMC exercise)	3rd to 5th week
3	**Phase 9** Patent drafting exercises (PDE) and other IP and technology management related things	✓ By this stage the proto-type of the final year project should be in consolidation stage. Various IP related tools and technology management processes to protect IP, improve efficiency and make it a user centric innovation will be done during this phase.	6th to 9th week
4	**Phase 10** Benchmarking your innovation and final product design	✓ After all the nine steps/phases as mentioned above, the teams will iterate for different steps before making the final product. While developing the product the teams will implement their technical knowhow and compare the solution with near similar existing innovations by different user or market. ✓ Versions of prototype is essential with all details of iterations and modification *(there are more than 5000 prototypes have been made for vacuum cleaner before launching it to market, so every solution requires many iterations before final product.)*	10th to 12th week
5	Final updates in PMMS , report making, online real time Periodic Project Report (PPR) submissions	✓ During this phase each team will check if they have updated all data through PMMS tool and finish necessary requirements ✓ College level IDP/UDP/Project Expo and award/appreciations to best ones in presence of industry experts and mentors	13th and 14th week

Sr. No.	Phases	Key Activities	Time Line (in week)
6	Working research paper/case study	✓ The working research paper/s could be based on actual work done by students in the project/start-ups related to similar technology/technologies related to project/trends in the subject /innovations/Patent analysis /any other analysis/Pedagogies related to their project or may be on actual Impact by the work.	Till term end

Note:

- Students will be required to write small case studies/working research papers based on the insights of their research and project work in 7th and 8th Semester and present in college/conferences/seminars. (*But it would be advisable to file a patent before it, if the research and project is unique and highly novel. In other cases they can go ahead with research publication directly*.) The working research papers could be based on actual work done by students in the project/start-ups related to similar technology/technologies related to project/trends in the subject/innovations/Patent analysis/any other analysis/Pedagogies related to their project of 7th and/or 8th semester or may be on actual Impact by the work.

- Each team pursing BE has to make working research paper/s in 8th Semester and present it to jury in the college and university nominated experts.

- GTU external examiners and internal guides (industry guide can also be invited) will review the working research paper/s during final year project examinations. Internal evaluation of such work can be done as a part of continuous evaluation of the project work.

- Student teams can also present their papers in any other conferences during the academic year. If they have been accepted in high impact conferences, weightage should be given while making project evaluation by examiners for university examinations.

- (A)Teams having filed genuine novel patent through GTU patent clinic or other ways, (B) students having published research papers in impacting journal/conferences/Seminars (C) Teams having built enterprises/start-ups based on final year project work or similar research will be given special certificates at the end of the academic year by GTU.

- If any team of students feel that their project can fulfill the criteria of "Specialization in Technology Entrepreneurship " program in GTU while doing their final year project or project through Design Engineering program then they can apply separately for the said program before commencement of 7th Semester.

Post 8th Semester Exam Support

Optional participation for benefit of students who wants to further improve their projects/ideas

Category of Support	Description
IPR/Patenting/Licensing Support	✓ Through linking of various Govt. agencies who supports such cause ✓ Patent Clinic Program at GTU Innovation Council
Funding	✓ Linkages for Grants (Linking to Govt. and potential agencies) ✓ Crowd funding initiator (CFI)
Design and fabrication Support	✓ Linking to design clinic programs and design support systems for product design for selected projects ✓ Fabrication support by CiC3 lab
Student Start-up Support System (S4)	✓ Linking to (student start-up support system) S4 center of GTU Innovation Council ✓ Linking to other potential incubators ✓ Summer Start up leadership program ✓ Entrepreneurs in residence (EIR) program ✓ Linking with support system like Govt. Start-up assistance scheme

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General Note:

- Students may carry forward the project of Design Engineering subject from previous year as final year project. Those who are considering Design Engineering project for final year project and want to work on further development of the same need not to repeat the phases from Observation to Prototype as they have already implemented in Design Engineering. However the project report must include the work done from Observation onwards (i.e. Report must be self-sufficient). But they can further implement the project from prototype phase to make it marketable. Here faculty guide and students team need to work on schedule and implementation strategy for such cases.

- Those who will select new domain/definition for their final year project need to follow the above mentioned guidelines for final year.

- All the steps from phase 1 to 5 and later on from phase 7 to 10 can be iterative rather than strictly in linear fashion. Each team can run some steps in parallel and some in loop so that every insight derived from the process get suitably implemented while making the whole project.

- The weekly schedules is given taking general scenario in mind, one can reschedule it based on the project and work for each phase. But the continuous evaluation by faculty guide or industrial mentor must be done timely to upload PPR.

- As some projects need more than 1 year to reach to a stage of final product (ready to be used), the students and guides can take up such projects from previous years exactly from where it has been left by the previous teams. GTU believes that in little such iteration and cycles, many left out final year projects can be converted into a useful product for end users or successful Start-ups.

- GTU is the 1st large state technological university which believes that by thoroughly crafted policies, processes, incentives and real-time mentoring and quality benchmarks at least 1000 B.Tech student projects can become useful product every year. Some of these innovations can possibly become successful technology start-ups or get transferred to MSMEs which in turn can use them for improving their proclivity and create value.