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Analysis of the Problems Faced by the Fresh IPE Graduates at Their Initial Career

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ABSTRACT

Department of Industrial & Production Engineering started its glorious journey from 2006 in Rajshahi University of Engineering & Technology. Since then approximately 250 students graduated and continuously enhancing the global quality of the department through leading discovery and innovation. Despite their shines in career, some problems come their way and make them realize that they should be more careful about them in their University life. In order to get the regarding information, we surveyed about 100 graduates of IPE from different series. They are now working in different sectors with a different designation. Their experience about their career life will help us to find out the problems faced by the fresh IPE graduates as well as it will help us to solve the problems in our University life. We analyzed the data & build methodology through the brainstorming process & finally achieved our result. This will provide a way to overcome the problems faced by the fresh IPE graduates in their initial career.

Keywords: IPE, Graduates, Career, Suggestions etc, *Kaizen*

1. INTRODUCTION

The process of graduation helps the graduates in their career alongside his future life. So, in this time they should be more concern about their learnings. The department can

provide them proper guideline and it can also modernized its education structure. For this we need to survey among the graduates. After survey we have to analysis the results. Then we have to identify the future scope and obstacles and make a conclusion of the remedy of the initial problems faced by the fresh graduates. Actually, graduate quality improvement is a very important task but it is very difficult to solve without finding the root causes. This is a long-term process & have not felt the problem deeply yet by anybody. This article will help to all students of Department of Industrial & Production Engineering of developing, less developed or underdeveloped countries.

The admission system in Engineering Universities is not so easy. A very competitive examination is held among the students who score more than 80% marks in Physics, Chemistry, Mathematics, English in A level exam. Eligible students can participate in the admission test which varies in different universities from 500 to 700 marks. Both written & Multiple-choice questions have to be answered. The merit position of the admission test result is published based on the order of marks scores in the exam. Then, they can get themselves admitted into different programs according to their merit position & order of choice. In this system, many students can't get admitted into their desired Engineering program. It is one of the major reasons for poor academic result as well as frustration.

The social medias are taking a lot of time from us. Students are teenagers & they are the main victim of social media addiction. Attraction to opposite gender is one of the vital causes behind the problem. Getting rejected to love proposal, suffering from frustration, failure in scoring good result in spite of trying harder etc. deviate many students from studies. It is a responsibility of the university to help them & guide them so that it is possible to overcome these problems at the early stage but university is immutable in this case & only care the good students who get higher marks only. This type of discrimination & humiliation discourages students to ask help to the university or course advisers. In this research, a continuous approach has been applied experimentally within the students who were trying hard to overcome their situation.

A few works were initiated & successfully starting a flow in different types of improvements in our university. In 2017, Hasan, M.Z. & Dutta A. applied PDCA cycle, a concept included in TQM philosophy in order to improve personal skills of Engineering students & successfully initiated a study on students to develop their skill to ensure better career [1]. Hasan, Z. and Hossain, M.S. experimentally applied TQM tools to determine root causes & used PDCA cycle concept of TQM & successfully improved the effectiveness of Engineering students in 2018 [2]. Channar, S. H., Mehran, A. A. S., Ali, N. I., & Brohi, I. A. showed the problems that are faced by the females Postgraduate students in the universities of Jamshoro cities, Pakistan & found a solution in their research in 2017 [3]. In the year 2015 Shreenivas, B., Archana, H. R., Gururaj, C., & Ambika, K. leveraged the use of technology in the conventional teaching system, which results in improved teaching-learning process. The focus on OBE was through the use of various assessment methods in a specific course [4]. In the year 2014 Daghan, Gökhan, and Buket Akkoyunlu examined cases on performance based assesment methods (PBAMs) & enabled students to take responsibility of the method also for progress in lessons [5]. Kubota, K., Terashima, K., Nakahashi, Y., & Morioka, H. analyzed the distance learning environment in Japan & suggested to provide different learning strategies according to the students need for their improvement in 2008 [6]. In the year 2016 Miyakoshi, M. worked on a research to understand the connection between higher education as a joint development project between Egypt and Japan and ESD based on students' opinions

[7]. Korsah, K. G. in 2013 examine the factors that impede the academic progression of graduates from technical institutions to the Polytechnics and the Universities, reasons of not getting the appropriate level of job placement in industry & suggested to modify the curriculum [8]. In 2016 Ali Alghail, A. A., & Ali Mahfoodh, O. H. worked in the assessment of the academic reading difficulties encountered by international graduate students in a Malaysian university & solved the problem [9]. In the year 2010 Hai-ming, H., Hai-ling, G., & Guo-chun, H. Surveyed on Graduate Employment Difficulties and reached a solution by adjustments of schooling, strengthening the training of students` comprehensive quality, solve the students conformity psychology and offering employments guidance courses [10]. Geng-yu, W., Meng, Z., & Jun-wu, T. Analyzed of employment difficulties of female graduate students in Engineering colleges in 2011 to solve the problem [11]. In 1989 Chi, M. T., Bassok, M., Lewis, M. W., Reimann, P., & Glaser, R. discussed that self-exploration is a solution of choosing own career, understand things easily & solve problems instantly [12-17].

2. MATERIALS AND METHODS

The sequences of tasks in this research are -

- A survey is done to know the real problems a fresh IPE graduate face at his initial career. For this we collected information from our honorable seniors from different academic series. To contact them we used E-mail, Social apps. We created a form by the help of google docs to collect their experience about their faced problems through internet.
- After collecting the information, we created a Database by the help of Microsoft Excel software.
- Then with the help of Microsoft Word and Microsoft Excel we create an analysis of the survey result.
- According to the survey result we selected the most voted problem and then we provide a solution of the problem by the help of multiple decision-making criteria.

Table 1. Challenges a fresh IPE graduate face

Serial No.	Challenges they have faced
01	If you ask the challenge for 1st career then must say "waiting for a call for viva". In this point, your CV & networking is very-very important.
02	Multi-task in very short time.
03	Choice of a job field that I expect to start my carrier.
04	To survive inside new environment.
05	To cope up in a BUET environment.
06	Communication.

07	English Communication with foreign management including my Dept. Head.
08	New environment with new faces. It is a very big challenge for everyone to cope with that conditions.
09	To manage people.
10	Garments Oriented Job Sector for IPE Graduates in BD. Hardly, there is Job opportunity in other sectors for IPE Graduates.
11	Not faced.
12	To cope with the new environment.
13	Communication problem.
14	Communication problem.
15	To Cope with new environment.
16	For higher study.
17	Presentation problem.
18	Communication related problem.
19	Presentation Skill.
20	Communication Problem.
21	For me it was hard to adapt with the industrial environment.
22	To adapt with the working pressure in garments sector.
23	Mainly IPE related jobs are challenging for girls. It was hard for me to cope with the working environment.
24	To maintain the working pressure in new environment.
25	To choose a particular sector when there was a lot of opportunities.
26	To cope with new environment, new people and working pressure.
27	High pressure of the industry.
28	Report submission to boss.

Table 2. Environmental adaptedness of workplace

Options	a. Very adaptable	b. Adaptable	c. Hard to adapt	d. Very hard to adapt
Frequency	1	16	11	0
Frequency Percentage	3.57%	57.14%	39.29%	0%

3. DESCRIPTION

We can see from the Figure 1 that about 57% of respondent feels that the environment of working environment for fresh graduates is adaptable. 39% of them thinks that the environment is hard to adapt. 4% of them feels the environment for freshets is very adaptable. From this we can conclude that we are still facing problems regarding environmental adaptedness.

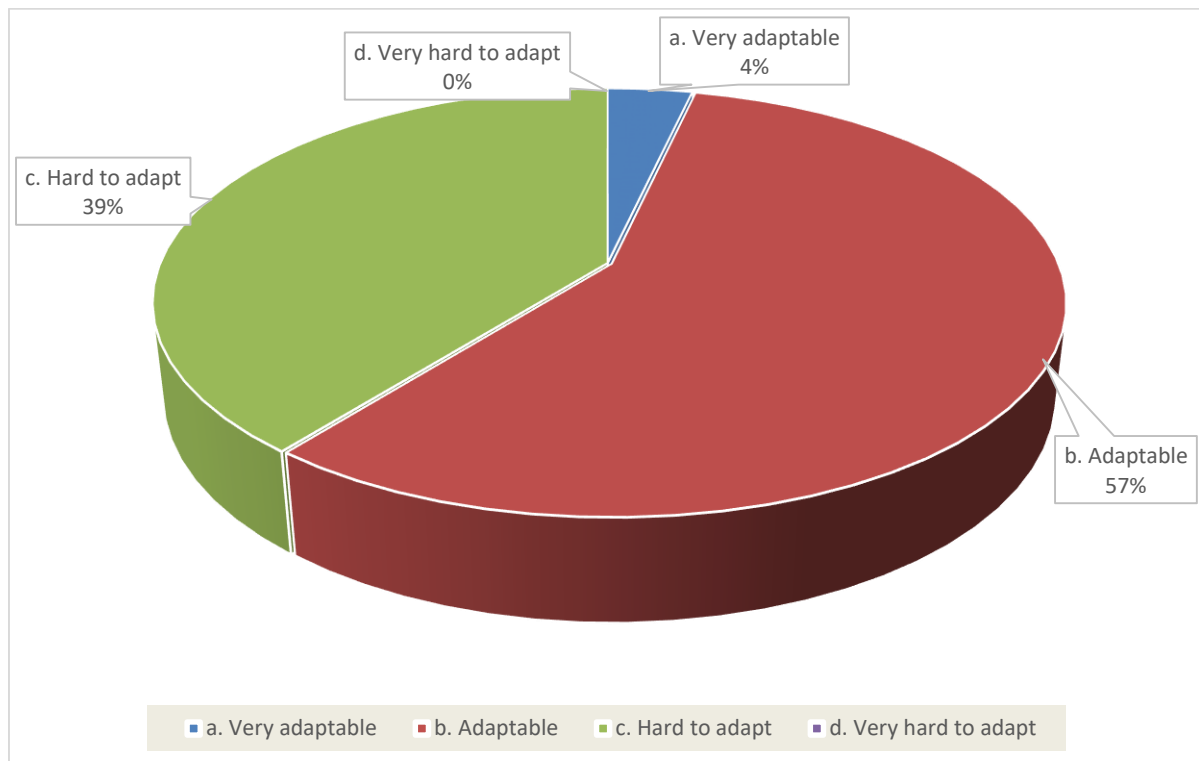


Figure 1. Pie Chart of environmental adaptedness of workplace.

Table 3. Communication Problem

Options	a. Not faced	b. Often faced	c. Faced a lot	d. Faced but overcome easily
Frequency	4	5	2	17
Frequency Percentage	14.29%	17.86%	7.14%	60.71%

As described in question 1 suggestion section (Suggestion i) communication problem is many of the respondents common problem. Selective perception, Language, Silence, Cultural barrier, Gender difference are the most common barriers of communication. From the Figure 2 we can see that 61% of the respondents faced the communication problem but they overcome that easily, 18% of them often faced, 7% faced a lot and the left 14% respondent didn't faced the problem.

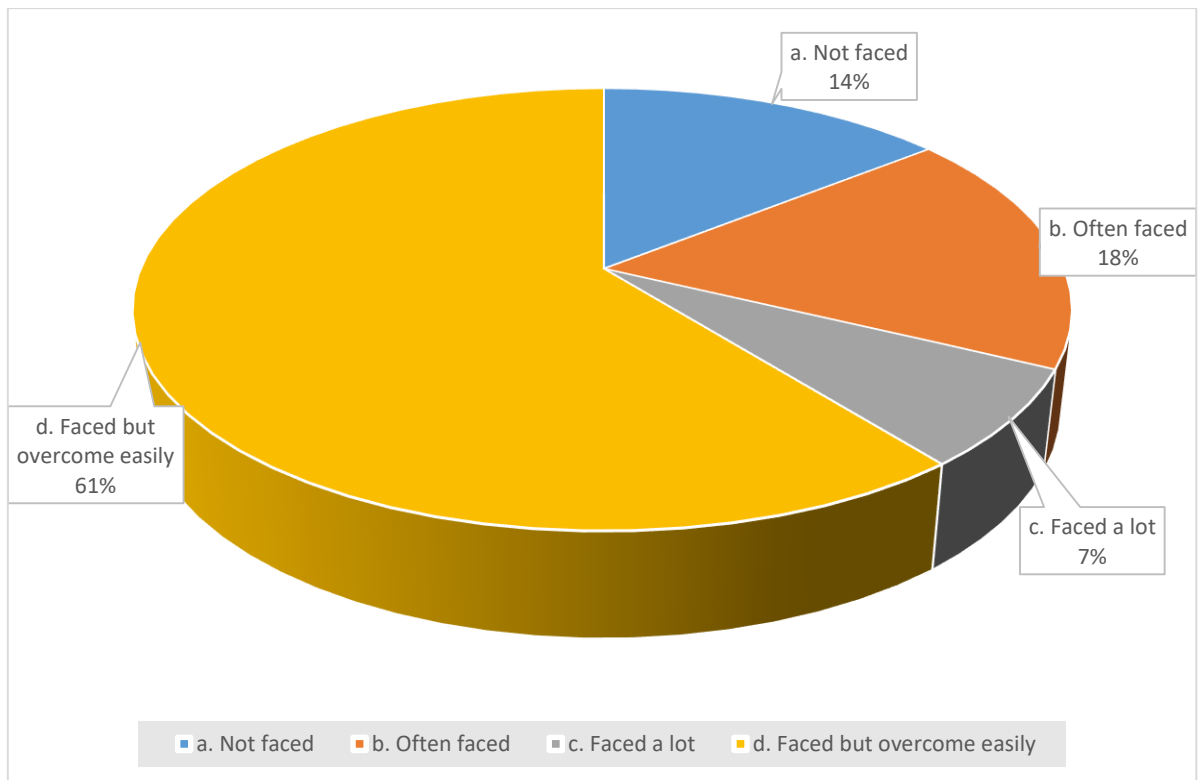


Figure 2. Pie chart of communication problem

Table 4. Important softwares to learn.

Options		Frequency	Frequency Percentage
a. Microsoft Excel		28	100.00%
b. Microsoft word		26	92.86%
c. Microsoft Access		11	39.29%
d. MATLAB		3	10.71%
e. AutoCAD		14	50.00%
f. SolidWorks		11	39.29%
g. LINDO		2	7.14%
h. C/C++ programming		2	7.14%
i. Others	Photoshop & illustrator	1	3.57%
	Microsoft Visio	1	3.57%
	MS project	1	3.57%
	Application based soft	1	3.57%
	Microsoft PowerPoint	5	17.86%

The good knowlwdge of different software makes an IPE graduate more smart. From the Table 5 and Figure 3 we can see that 100% of the respondent thinks that Students should learn Microsoft Excel, then comes the importance of learning Microsoft Word and the percentage of importance is 92.86%, importance of learning AutoCAD is 50%, then comes the SolidWorks and Microsoft Access both of them are equally important and the importance is 39.29%. Importance of learning Microsoft PowerPoint is 17.86%, MATLAB 10.71%, C/C++ programming and LINDO both 7.14%. Application based soft, Photoshop & illustrator, MS project, Microsoft Visio are equally 3.57% important.

Table 5. Condition of lab facilities.

Options		Frequency	Frequency Percentage
a. Enough		0	0.00%
b. Need a little bit modification		19	67.86%
c. Need to change a lot		7	25.00%
d. Other suggestion	Enough but some improvement opportunities there	1	3.57%

	It depends on job responsibilities. Regarding the IPE graduates these are suffice. Since we are getting modernized with automation, hence our lab facilities would be followed by then.	1	3.57%
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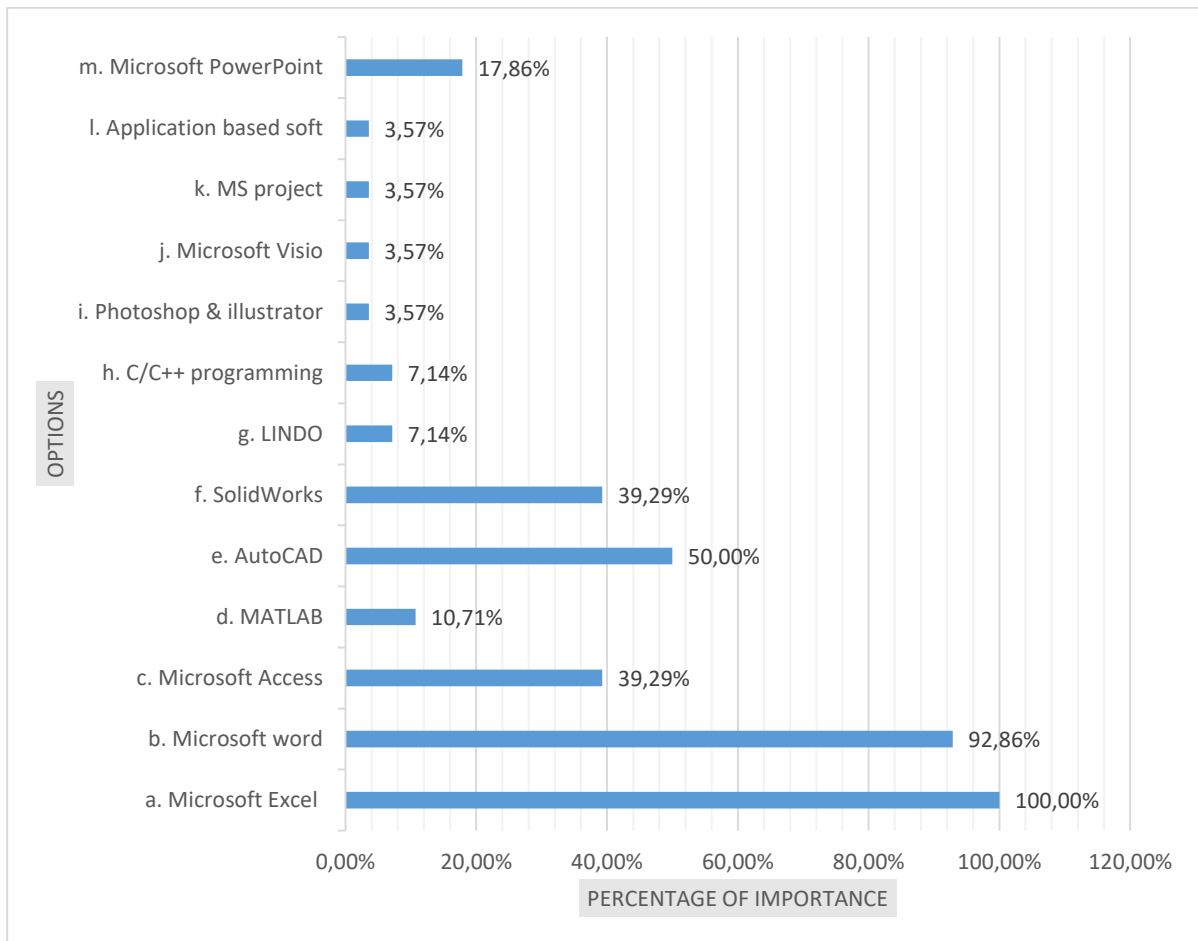


Figure 3. Bar chart of important softwares to learn

Lab facilities is a very important thing to the whole graduation process. A little bit of lack in this section causes a lot of learning gap. Figure 4 shows that the lab facilities need a little bit modification and this is voted by 68% graduated respondents. 26% respondent there need to change a lot. 4% said that the facilities are enough but there are some important opportunities. Later 3% said that the lab facilities should be modernized.

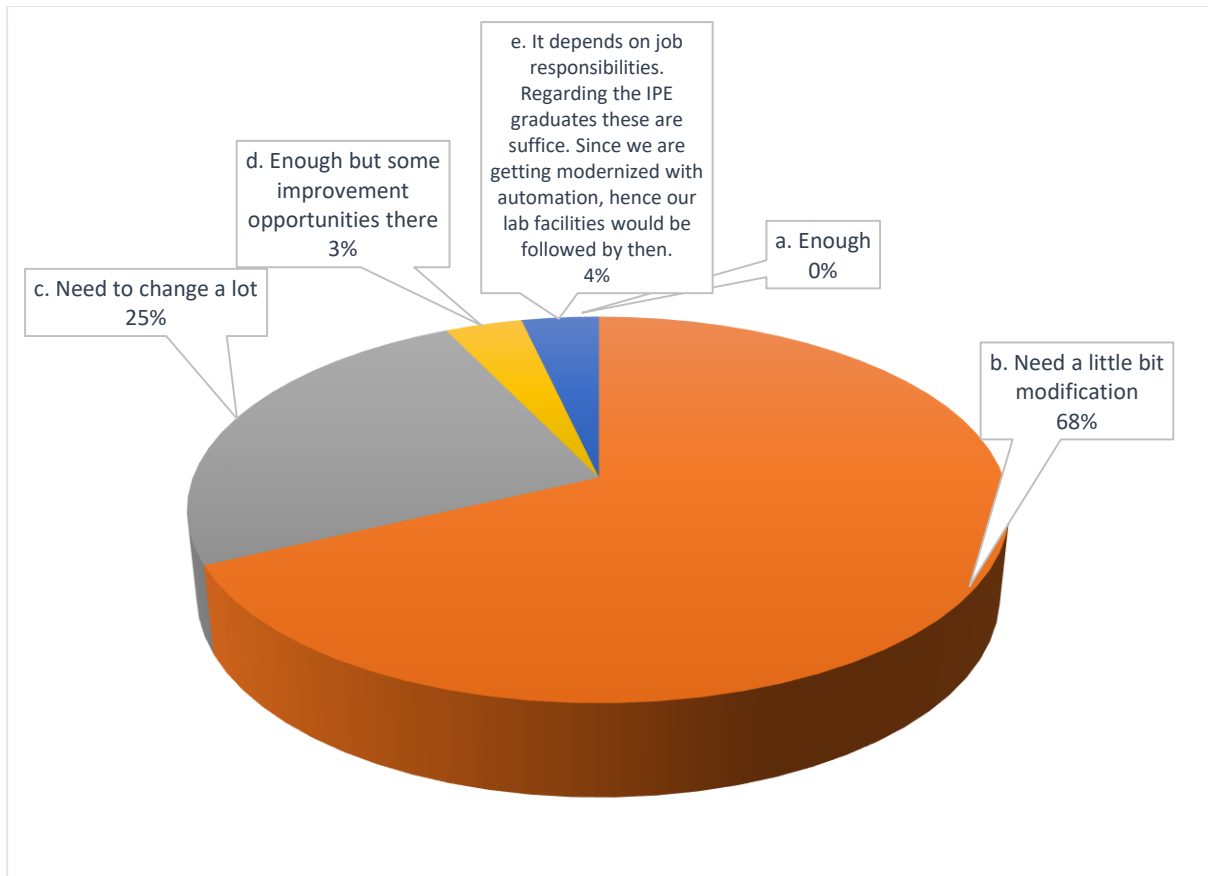


Figure 4. Pie chart of condition of lab facilities

Table 6. Problems for Session Overdue.

Serial No.	Problems they have faced for session overdue
01	I have avoided to overdue session. However, in this case, learning was missed and scold by boss is must. A negative mark adds with your personality. Because in career life, discipline is very important.
02	We should more smart in our speech, body language, dress code & loyalty.
03	Your juniors of other university will lead you in the job.
04	N/A
05	I am entering into the job market 1 year later, while some of my colleague are actually my junior. But, I think it's not a big deal.
06	Timing.
07	Got job before result published, so no major problem faced due to 5months delay the session.

08	Actually I didn't face this sort of problem because we passed away on due date.
09	There are so many problem for session overdue like the unhappiness of boss.
10	Initial lagging in competition.
11	N/A
12	For session overdue, the others varsity students can easily lead you in the job sector.
13	Timing of job circular.
14	Not faced any problem for session overdue.
15	Passed later and as a result joined later in job.
16	So many problems were created for session overdue. Mainly in job sector we were missed so many job circular for session overdue.
17	Passed later.
18	No Problem.
19	Passed later and as a result started job later
20	Juniors from others varsity passed quickly and as a result we competition were increased in job sector.
21	Promotion problem compare to other university graduates.
22	The main problem was timing. But personally, I didn't face any problem for session overdue.
23	Got job so early, so I didn't face any problem for session overdue.
24	N/A
25	It wasn't a big problem for me at all.
26	Mainly frustration is the major problem of session overdue.
27	Family pressure and also mental pressure.
28	Delay to get job

Table 7. Suggestions for the syllabus of IPE.

Serial No.	Suggestions for the syllabus of IPE
01	Please add, Decision making in PPC (production planning & control), ref book- Fundamentals of Management Science, Sixth Edition, by- Turban, Meredith. Profit planning in accounting, Business communication- very very important & required for whole career life, way of negotiation, formal processes , engineering applications like HVAC, PLC, TIS (Technical information system) etc.

02	I think, 1. Physics, chemistry, math can be merged as much as possible instead of several semester. 2. Supply chain management, Operations management, Organization behavior, Industrial & Business Management should be extended. 3. Industrial attachment time should be extended 4 week to 12 week.
03	Lab facilities of control and automation, Simulation should be made more effective. Some practical industry base problems should be practice so that a graduate can understand the problems in his job life easily and trace it easily.
04	N/A
05	Need slight modification.
06	Be Updated in industrial Problem, more focus on communication, software related topics.
07	Excellent, some chapter may be included like Lean Management, Six Sigma Management, Systematic Problem Solving Tools etc.
08	There is no comment regarding the overall syllabus of IPE but some Industrial Engineering Tools like as Lean Manufacturing, 5S, TPM, TQM, JIT, POKA-YOKE etc. could be taught separately by initiating 1 or 2 credits so that the students get acquainted with these in broadly before entrance into job fields.
09	No.
10	Need to increase the use of Software in Lab sessions and assignments.
11	Lean manufacturing is too much important. So, it should be added as a course.
12	Mainly, we need more practical knowledge. For this the attachment should be increase. Need More quality control and management related course ...
13	Need some modification about physics, chemistry course and I think credit should be decrease for those courses.
14	Management related course should be increased.
15	Need more practical life related course like Organizational Behavior , Management etc.
16	Some modifications are needed in our IPE course.
17	No thanks.
18	Need more courses about Six Sigma, management etc.
19	No thanks.
20	Need more courses on quality control, quality management, six sigma etc.
21	No.
22	Some practical job related problems should be practice in graduate level.
23	We should focus on real life problems. For this industrial tour needed (I think).

24	Non departmental courses should be minimized and departmental courses should be increased.
25	Presentation related context should add in the syllabus.
26	N/A
27	Attachment duration should be increased.
28	No

From the Table 7 we can conclude to the following changes to our syllabus-

- (i). Decision making in PPC (production planning & control), ref. book- Fundamentals of Management Science, Sixth Edition, by- Turban, Meredith should add in the syllabus.
- (ii). Profit planning in accounting, Business communication related subjects and courses should add in the syllabus.
- (iii). Iii) Physics, chemistry, math should be merged as much as possible instead of several semester and Supply chain management, Operations management, Organization behavior, Industrial & Business Management should be extended in several semester.
- (iv). Lab facilities of control and automation, Simulation should be made more effective. Some practical industry base problems should be practice so that a graduate can understand the problems in his job life easily and trace it easily.
- (v). Industrial attachment time should be extended as much time as possible (at least 6 to 12 weeks).
- (vi). Software related topics and courses should be add in the syllabus.
- (vii). Special care should be taken on Lean Management, Six Sigma Management, Systematic Problem Solving Tools etc.
- (viii). There should be add some Industrial Engineering Tools like as Lean Manufacturing, 5S, TPM, TQM, JIT, POKA-YOKE etc. could be taught separately by initiating 1 or 2 credits so that the students get acquainted with these in broadly before entrance into job fields.

Table 8. Suggestion regarding our whole graduation system

Serial No.	Suggestion regarding our whole graduation system
01	Its good design, no doubt, although many courses seems very irrelevant & painful, but in few cases those are important. So we should read all with equal importance. To be specific our courses can include above terms which must aid IPE Engineers guaranteed. Thank you.
02	1. Complete formal dress at least one day in a cycle must be ruled. 2. Presentation in every cycle after 2nd semester (no group, one topic one student).
03	Industry based jobs are more practical than theoretical. So we need to understand the every problem practically.
04	N/A

05	N/A
06	N/A
07	Students should enhance their Leadership Skill, Communication Skill, Proactiveness through voluntary participatory work (not hampering the class & study, it's a parallel task). Now please try, take challenges & do your best!
08	It is a common practice in our graduation system to go through the bookish knowledge whereas the job field is completely different than it. Students have to face a lot of problems during job lives which are not embedded into the books. Some seminars, workshops, idea contest etc. could be run along with academic activities to enhance and garnish the knowledge of students so that they can compete with outsiders at very beginning of their job lives.
09	There should be some modification in graduation system. I think the more materialistic education should be introduced so that in our real job life we can think that we have already done that in little scale.
10	Need to increase the communication with industrial sector and corporate sector.
11	N/A
12	Need more lab facilities and new machine in the machine shop like CNC machine, etc.
13	During your BSc course, you should focus on your target and work for it.
14	N/A
15	We need more practical knowledge. For this, I think some modification needed in our courses. Thanks.
16	I want to suggest to the new graduate's, focus your target and try your best to fulfill it. That's all .Thanks.
17	I think some improvement needed in our lab facilities.
18	Mainly we need to improve our bonding. It's most important matter for IPE related jobs. Thanks.
19	No thanks.
20	We need more practical knowledge for this we need more time in attachment.
21	The system should provide every student good at communication and make himself reasonable for his position.
22	Need more knowledge about industry, factory and other job sectors. So that, one can easily cope with the new environment of job place.
23	Some modification needed - 1. Physics, Chemistry related courses should minimize. 2. Seminar, workshop should increase.
24	Need more seminars and workshops on IPE related topics.
25	Co-curricular activities should give more concern and practical knowledge should develop.

26	I think our department need more club to practice our course related practical problems. Need more conference and workshops on our courses.
27	Presentation and report submission are the most important matter for promotion in the industry .so I think more importance needed for those issues.
28	N/A

From the Table 8 we can take the following decisions-

- (i). Complete formal dress at least one day in a cycle must be ruled.
- (ii). Presentation in every cycle after 2nd semester (no group, one topic one student).
- (iii). Students should understand the every problem practically.
- (iv). Students should enhance their Leadership Skill, Communication Skill, Proactiveness through voluntary participatory work, practicing co-curricular activities (not hampering the class & study, it's a parallel task).
- (v). Some seminars, workshops, idea contest etc. could be run along with academic activities to enhance and garnish the knowledge of students so that they can compete with outsiders at very beginning of their job lives.
- (vi). More materialistic education should be introduced so that in our real job life we can think that we have already done that in little scale.
- (vii). Need to increase the communication with industrial sector and corporate sector.
- (viii). The graduates must focus on his/her target and try his/her best to fulfill it.
- (ix). Bonding among the graduates and current students must be improved through organizing and attending different programs.
- (x). Our department need more club to practice our course related practical problems as well as need to arrange more conference and workshops on our courses.
- xi) The system should provide every student good at communication and make himself reasonable for his position.

4. CONCLUSIONS

We did our survey on 28 IPE graduates this is only 11.20% of total graduates. If we did it with the whole 100% graduates we could reach a better solution than this is. But the sampling was random and they are from different series and works in different sectors as well as different institutions. Therefore, the most important problems are identified and we tried to project a solution as result of our research. This step of our result should employ in our graduation system with some modification and further research.

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