MINORS & PROGRAMME ELECTIVES

Consulenzá

MECHANICAL ENGINEERING ASSOCIATION 20-21

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MINORS

PROGRAMME ELECTIVES

COMPUTER SCIENCE

The course offered for CS minor in 4th sem is Data Structures and Algorithms. Some of my seniors suggested me to take this course so that it would be beneficial for Online Tests of Software profile for interns that come at the beginning of 5th sem. If any one is purely interested in Software profiles, then one can take up this course. This course deals with the ideas for solving a problem. If someone has prior experience in any one of the programming language, they find it easier while writing codes in exams. For those who have no prior experience can also take up the course with proper fundamentals gained from programming language learnt during 1st year. If the concepts taught in class are given proper attention, one can easily solve the problem , but coding skill is required when asked to write a code in exam. If one is interested in coding , then they will have to take up the course and also learn languages in course of time. But if one has no interest in getting into software roles, this course might not help them. Scoring or grades, which is of greatest concern to many of them, is relative, based on the other student's potential .

This course is a mini version of cs engineering, but of course can be guessed by the name. I chose this course because I wanted to work in interdisciplinary fields in my career. Students who might want to work in interdisciplinary fields, or who want to maybe change their domain from core mechanical to cse can choose this course.

This minor contains 5 courses across 5 semesters, starting with DSA and covering almost all topics of cse in their courses like operating systems, DBMS, hardware concepts etc. Initially, this course will be comparatively easier for people who have familiarised with coding in their schooling, but anyone can learn it with time since the concepts are more focussed on the logic behind the code rather than the code itself. Talking about the difficulty of this course, it isn't that difficult, if one pays attention to the class, understanding the concepts are very easy. With enough practice in the concept, one can easily learn these concepts and even explore more advanced topics from the course.

So far, I am satisfied with this course and I am sure students who have interest towards this subject will also be satisfied. Talking about scoring in this subject, initially students who have had coding experience might have a head start, but it disappears very soon.

COMPUTER APPLICATION

My reasoning for choosing this course was to get an insight into data analytics. In my batch, many students were taking CSE minor. I didn't specifically want to learn CSE, but I wanted an insight w.r.t data analysis. CA minor was the best option at that time.
I have completed three courses of this minor over the semesters, and I must say that their teaching approach is very theoretical. It also depends on the type of professor that you'll probably get but don't expect much from them. Mostly, they'll try to rush through the syllabus without getting deep into it. In short, it's quite superficial, and if you really want to get deep in data analytics and stuff, I'd recommend some online courses than taking minors in CA.
Ease of course: It's definitely not easy. In my first course in CA, only 12 classes were taken, and for the end semester, the professor just handed us some notes to study. The second course was no different. They'll teach you like 30-40 % of the syllabus, if you're lucky and rest you have to the study on your own possibly from YT.
Did it meet my expectations? No, it didn't meet my expectations. I expected that the teaching process would have some amount of practical applications of the theory and concepts that they'll teach, but I was again let down. They'll just come, teach via ppts and go.
Ease of scoring: Only if you can mug up 200-300 slides worth of information within 2-3 days. (Examinations will be 99% theoretical)
In conclusion, I wouldn't recommend this course. There are plenty of quality courses available on online platforms such as Udemy, Coursera, Edx, where the instructors will teach you 1000 times better.

Every course from this minor except the course on data analytics is completely chill. There'll be no cts, just a direct endsem plus one assignment. Make sure to write the assignment neatly. Assignment can carry a weightage of either 30 or 40%. Teaching is pretty bad, however the teachers are not strict. There'll be around 12-13 classes and attendance will carry 10% weightage. Grading is also pretty chill.

ECONOMICS

I selected this course because I've always been interested in economics and commerce. The course materials seemed to be pretty futuristic, since it involved forecasting tools like ARIMA, Neural Networks and many more topics. The problem with this course is the unavailability of more than one faculty to teach all three years(minor can only be chosen after the first year). This leads to there being very few classes in one academic semester, most of the time the number is less than 5. There are no assignments given and there are no CTs, so during the semester, there is little to no tension that a student will face. The professor gives a couple of textbooks one week prior to the semester examination. Usually, the semester examination and a CT for the same subject are conducted on the same day, with an evaluation split up of 70-30 or 60-40. The semester exam will prove to be difficult since it is completely dependent on the self studying capacity of a student. Overall, if you have no expectations from the course and are ready to study at the last minute and get 3 credits done with every semester, this is the course for you.

As many students do, I asked my seniors when it came to selecting electives/minors since it was new to us in the 4th semester. I explained my situation that I had a low CGPA, and I want to increase it because, from the 5th semester, the companies start offering on-campus internships. Many good companies would have a minimum of 7.5 as the eligibility criteria to even sit for OT's. Moreover, if you are planning to apply for MITACS/DAAD scholarships, then higher the CGPA, the better. So, they suggested Economics/Management minor as it would be easier to score. Moreover, the classes are not that often compared to the other minors like CS, ECE, EEE.
 The Economics minor course will be more useful when you learn it on your own and not depending on the professor entirely. Like all other courses, if you put in some productive time, it will be much easier.

ELECTRICAL AND ELECTRONICS

Before going into why I chose EEE minor, I would like to start with why a minor. The world is seeing immense technological advancements, and none of these pertain to a single field of study. Everything is interdisciplinary. In this regard, a minor can help you gain some concepts from a specific field and open electives help you gain some knowledge in a specific course that you find interesting.
By the end of my third semester when I had to select electives, I found myself to have an inherent interest towards mechanisms and their behaviour in space. I realised that these often come with a need for actuator, control, and hence electrical and electronics and hence I chose to minor in EEE.
I have done three out of five courses, electric circuits, control systems and electric machines. All these courses have been very useful, especially control systems, which I could now apply on mechanical concepts. In electric circuits, we learnt basics of circuits at a preliminary level. Control systems covered the fundamentals of what a control system is, and how these can be applied in real life applications. In electric machines, we learnt the different types of motors, transformers and their working etc. The courses do not go deep as much as it is for the EEE Dept core courses, but what all is required for a non EEE background is covered. The applied EEE core course for Mech will be a gist of some of the minor courses. EEE minor is allowed only for non-circuital students and hence no problem of a circuital student strong in circuits competing with a non-circuital student who is just learning happens.
The courses are not theoretical courses where a lot of memory is required but more of how much you understand.. If you want to choose a minor so that you can score easily and get a good grade, I would advise you not to choose EEE minor. My batch EEE minor has a strength of ten and hence the course is absolutely graded, hence it is not as easy to get a good grade when compared to the core courses which have relative grading. This grading scheme depends on the strength of the class.
The three courses that I have had till now have been quite satisfactory and has helped me in applying it with mechanical concepts.

The course I took was EEE minor – total 5 courses:
Basics of electrical circuits, Control Systems Engineering, Electrical Machines, Analog and digital electronics.* Power system engineering.*
/* the last two courses are not yet confirmed.
Basically, I am a robotics enthusiast. I am member of RMI and did all my interns and projects in Robotics. Robotics is a multidisciplinary field. It involves Mechanical, Electrical, CS, ICE etc. Only mechanical is not enough and one is expected to have basic knowledge of electrical, electronics and coding.
The main reason I took EEE minor is in the hope that It may reinforce my strength in robotics and for the course “Control Systems”. But it is also available as Open elective from ICE and EEE departments.
Obviously, some newly appointed guy will be teaching these minors and as of knowledge and skills, there isn’t much one can get from all the above listed courses. But taking these courses, one can make it official (in papers) and can put it in resume.
One of the main perks is you can use the tag “Mechanical Major and Electrical Minor” in cover letters, resumes and even in tech PIs. It personally helped me a lot and was the one of the main reasons I got intern in abroad.
Regarding scoring, all the above courses are very easy, simple and most of stuffs are already learned. Since it is minor, contents will not be in-depth and only will give a general overview of the topic.

- Basics of Electrical – R, L, C, Ohms law, KCL, KVL, RC, LC, RLC circuits and some other basics stuffs
- Control Systems – This is somewhat new but easy and simple to learn.
- Electrical Machines – Motors (DC, Induction, etc), Transformers, Generators, Stepper, Servo etc.
- Remaining two courses are not yet confirmed.

For further doubts and Inquiry regrading this course or even any other stuffs, one can contact me.

MANAGEMENT

I took Management Minor as I'm planning to dive into the management stream after few years in the corporate environment. It gives us a head start in management profile companies as well. The students who are planning to do MBA through GMAT or CAT should take up Management Minor. The course consists of 5 courses covering various aspects of the management studies in short.
The first course is Management Practices and Concepts which lays a foundation for the upcoming courses. The following courses include courses on fields like Marketing, Finance, Human Resources and Operations. Everyone knows the importance of these fields in any company and these courses help us gain understanding of these concepts at an overall level if not in a detailed manner.
The course in NITT is very easy to start with. The professors are pretty chill and the number of classes are comparatively less than the usual courses. The fact there are many students makes it easy for a lot of proxies. These are few reasons why one chooses Management in our college. There is a myth regarding the grading in Management courses. People feel due to the presence of a lot of CS guys the other department students get "RGed" but honestly there is no such thing like that. Putting in enough efforts for the subject few days before the exams for these courses yields good grades. The subjects don't need a lot of toiling as the concepts are all real life and is very easy to grasp. The course though not taken seriously by many gave me an opportunity to understand management as a separate field.

I have selected management minor, I was basically interested in management and wanted to explore its theoretical area. I maintained a decent CGPA till my 3rd sem and I wanted to ensure that my GPA wouldn't decrease because of the addition of another subject which is difficult and I found management is a relatively easier minor and since I was a part of few other clubs it is not possible for me to dedicate more time over my minor since we already have a number of other core subjects. It is mostly theory and would help write in your resume for applying for interns in management. Few other perks are its easier to score marks, an overview of management basics, and added resume advantage, two to three days of prep is enough, unlike few other minors which need more time to prepare. Exams are relatively easy and your score mostly depends on your memory and how well you studied before the exam and the classes are fun, mostly they are interactive and based on general topics so they are interesting.

PRODUCTION

I took this course called CAD CAM CAE from production and it was taken as a prod OE, the reason behind taking this course was to learn about CAM software. In mechanical we learn about CADD in detail we are given less insight into how the CNC machine works and how we get the final product so this intrigued to me learn CAM and this will also help you become a better design engineer because you will know the problems faced when it comes to machining of the complex parts. I did meet the expectations of this course, I learnt part programming which gave me an insight to the CAM software and after all this all we want is to score, in that aspect this course and the prof Dr Jerald was very liberal.

Regarding the course CAD CAM CAE, it is one of the production minor-subjects. Students who are interested in learning about NC and CNC machining, CAD and CAE can opt for this course. Through this course, students can get an introduction to NC and CNC coding and machining process and its optimization. It also covers computer aided process planning, various features of CAD packages and CAE. It is three credit paper out of which two credits is for theory and one credit is lab. Lab exam will be based on part programming using NC and CNC codes. The course content is easy and the evaluation is also fair and liberal.

HUMANITIES

I selected this course (Higher order Thinking skills) because a senior told me that it is easy to score A ans S in Humanities courses. I would suggest you to take the course only if you have real interest in that subject and if you are genuinely good in English. The course will be bit boring(theory) and you mostly will fall asleep if are not having real interest in English in general. Profs are approachable and good.

ADVANCE IC ENGINES

The reason of selecting Advance ICE is because I always liked the subject ICE which we had in 4th sem and the course content of that wasnt exhaustive. I felt like I am missing a lot of stuffs and need to learn those in depth to understand the working of an IC engine better. The course was very much intriguing, and was relatively easy to score. This course supplements automobile engineering in the sixth semester making it easier.

Advanced IC engines is a pure theoretical course which mainly focusses on fuel injection systems, cooling and lubrication systems, exhaust systems and some of the recent developments in IC engines in depth. It also includes a detailed description about the conventional and alternative fuels that are used. I was interested in the courses “Engineering thermodynamics” and “Thermal engineering”. In these courses, the topic IC engines was covered only till the basic level. I chose this elective since I wanted to explore more about IC engines and know about the recent technologies used in present day cars. I was satisfied with the course contents and how the course was handled. Though good amount of knowledge can be gained through this course, there is a lot to be memorized for the sake of exams. This course is enjoyable only if you have a true interest and inclination towards IC engines. Ease of scoring depends on the professor who will be taking up this course. Since it’s a theory course, if you have good memory and pitch in some time for preparation, it should be easy to score.

BIOFUEL

Great course, and they encourage practical learning, and it's a essential course to get stated with concepts on bio-energy. You'll have a lot of exposure on experimentation as research scholars are very friendly, and it'll be quite easy.

The course was handled by R Anand sir. This course is a complete theory based but Anand sir made this practical driven where we had practical experiment sessions on almost everything that was taught in the class. The lab was well equipped to cover all the aspects of the course. Scoring also is not difficult as the course is structured for maximum understanding.

COMPUTER AIDED DESIGN AND DRAFTING (CADD)

CADD/CAM was a mandatory subject for us, mostly theory was covered and few numerical. It's a relatively easy subject because most of the topics are theory. The topics include how CADD software is developed, its applications, uses, and theory concepts about different curves that are used in the CAD software. Preparation of day or two is enough to get good marks. By the end of the course, you will get a brief idea of how the software works and its applications.

CADD was one of our core courses. It is completely a theory course involving study of CADD software and hardware with solid modelling and geometric modelling. CAD hardware is studying about evaluation of different CAD systems and CAD software is about graphics standards and software modules. Geometric modelling is studying about representation and manipulations of different curves and surfaces. Solid modelling is learning about fundamentals and modelling manipulations of solid models. There is too much to memorise in this course which might make it difficult to score and also quite difficult to understand. I really did not enjoy doing this course and our exam was open book so, quiet easy to score.

COMPUTATIONAL FLUID DYNAMICS (CFD)

CFD as a course is all about the theory behind simulation software such as Ansys fluent, Abaqus etc. Anyone who is interested to perform simulation related research in the thermal field [including flow of fuel in IC engines etc] , fluid mechanics or aerospace, CFD is a very important course.
CFD has a lot of math with it, including partial differential equations, vector calculus and numerical techniques.
This course is not an easy course, it is one of the difficult courses in the department. Only if you feel comfortable with fluids or heat transfer and math or use simulation software and want to pursue research in fluids or aerospace or heat transfer, CFD will be a good choice. Else I would advise you not to chose CFD. CFD usually comes in semester- 6, after heat and mass transfer is done, so you will have a clear idea about whether you liked fluids, heat transfer. The course is explained very well by the faculty. There is usually two tests and a group project, where you will be asked to do a code and get a simple simulation.
Check the course plan in the previous year session to get to know more about the course. If you have not learnt fluids or heat transfer yet, then you have enough time to take a decision about CFD.
In a nutshell, if you want to do research in thermal, fluid, aerospace or want to work on simulations or like Math, CFD is a course you must choose for sure. But if you want to finish the program electives according to the count, or want to score easily without a hectic course, it is better to not choose CFD. All the best!

Computational Fluid Dynamics is a course which deals with methods to solve problems of fluid dynamics with the use of various concepts linked to fluid interactions. The course is combination of physical concepts and a lot of mathematics. This is one of those courses which is considered very
useful for Mechanical Engineers and can extract credits in core company interviews. The course has its roots from the core subject Fluid Mechanics of third semester and builds a gradual understanding of the following concepts. Students thinking about higher education especially in fluid field must
surely take up this course.
The course being a specialised subject needs a lot of dedicated time to grasp the concepts and apply
them. The course also contained a mini project which needs us to code the solution to a fluid problem which gives us the opportunity to hone our coding skills as well. The course isn't exactly easy.
Though the course isn't easy the concepts were explained nicely with proper flow and connectivity amongst the concepts by P. Kaushik. The exam paper will be of standard difficulty which can be tackled with sufficient preparation.

COMPRESSIBLE FLOW JET PROPULSION (CFJP)

I was interested in research in the field aerodynamics of aircrafts which required knowledge of supersonic flows, hypersonic flows and wind tunnel testing. I had already completed an online course on Sports and Building Aerodynamics, in which I got interested in learning about wind tunnel testing. Hence I chose this course.
The course had more numericals than I expected. The practical knowledge from this course can be obtained only when we work on research problems related to this topic. Infact during my current internship I used the knowledge regarding Converging Diverging Nozzle concept obtained from this course.
The numericals in the course are not really complicated, you need to understand the basics of the problem and use the gas tables book to obtain the answer. But if you want to gain the deeper knowledge in the subject it's necessary to understand the theory part of the subject which is a bit harder. Scoring depends on the professor and are we meeting his expectations. In my case it was R.B.Anand sir, whose grading was strict and I got the grade I expected.
My suggestion to juniors is if you are interested to work in the aeropsace industry or interested in pursuing highers in area of supersonic flows, propulsion and related fields go for this course.

Compressible flow and jet propulsion(CFJP) is a great course for people who are enthusiastic in learning more about fluids. I found fluid mechanics very interesting and it is completely about incompressible flows. I was eager to learn about compressible flows, so I chose this course.
The course helps develop a basic understanding about compressible flows under different conditions(heat transfer, friction, various nozzles). This concept will be applied to understand how different jet propulsion systems work. It also deals with compressible flow measurement techniques. The course needs to be given extra attention as there are critical concepts to be understood well and problem-solving ability to be developed. I'm completely satisfied with the course and it is a good opportunity for fluid mechanics and aerospace enthusiasts. The grading depends on the professor who is taking up the course. Unlike a theory course, it is not very easy to score in this subject unless a good amount of time is spent for the preparation.

MICRO ELECTRICAL MECHANICAL SYSTEMS (MEMS)

When I went through the course content of MEMS , it looked really interesting and something thats relevant to current trends rather than studying the age old concepts.
But the course didnt turn out as expected. It was completely theory, PPTs were provided and learnt from that and wrote in the exams. We didnt gain much of application based knowledge. Though we had few sessions where he did show some mems devices developed in his lab. Course content is easily understandable.
It is easily scorable if you knew everything from PPT and if you learn something extra from recommended books. Personally I didnt enjoy this course and I recommend juniors to think twice before taking this course.

MEMS or Micro Electro Mechanical Systems is a program elective which is completely theoretical subject and covers the basics of various types and applications of various types of MEMS devices as well as their advantages over traditional systems. The course is very interesting to those who are interested in design and in automobile.
Further, the course content was easy to assimilate and it was provided in a ppt format and while being taught in class, it was taught along with visual aids which made the understanding of the
subject easier.
Regarding the ease of correction. I believe that it honestly depends on the size of the class. When we(the 17-21) batch attended the course, we did it along with our immediate senior batch(16-20), making the class size total of over 100 students, which made scoring top grades competitive. But if the class size is restricted to only your batch, it should be a subject that is quite ease to score in with a decent amount of studying and understanding of each concept.

REFRIGERATION AND AIR CONDITIONING (RAC)

I always like courses which I am able to relate to or visualize better. On taking up courses like Engineering thermodynamics, Thermal Engineering and Heat & Mass Transfer I realized that I love thermal field because I was able to understand things better and visualize the concepts. Also, I was performing well in the thermal based courses. So, considering both my interest in the field and my consistent performance I chose Refrigeration and Air Conditioning as my elective in 6 th semester. The course introduces you to the different methods of refrigeration and air conditioning. If you like thermodynamics you will find RAC easy and interesting as it involves many thermodynamic cycles and properties. The course was better and more interesting than I expected.

The course content is actually good and interesting. Everything is conceptual and there is almost nothing that you need to memorise. The course will give you a better understanding of the processes that take place in refrigerators and ACs and how you can improve their performance. About ease of scoring it totally depends on the professor who takes this course. The content is not that vast and is easy to understand. I would say that you should think before enrolling this course if it is taken by Prof. Harish. He teaches properly but he will make sure that your assessments are not easy (his papers will be lengthy) and the evaluation is also not lenient. You can take this course if Prof. Harish is taking it if you are not that much worried about your grades. If he is not the professor in charge then I recommend this course to everyone.

RENEWABLE ENERGY

Choosing Renewable Energy as an elective is more of a choice between Bio-Fuels and it, as I wasn't much interested about Bio-Fuels and thought would get to learn more about different energy sources other than conventional one might be useful to apply something in the emerging green tech domain. The course had Solar, wind, geothermal, ocean energies and alternate fuels

To be honest, selected the course to get better grade with less work (as opposed to the ANN course I had taken previously). Heard that KRB sir gave projects and research papers, so secretly hoped it would not be him. Was subsequently handled by Vijayan sir.
Course is easy, covers basic aspects of many fields and processes. Good deal of theory to learn about. Frankly, this is not one of the get-ahead-in-your-career electives like CFD. But it does give you a basic idea into something that is quite prevalent. Scoring is essentially hit-or-miss.
Recommend taking the course to get an overall balance over all your courses.