

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPALLI
SEMESTER-6 GUIDELINES BY PRAJWAL SUNDAR**

A. Courses

Programme Core Courses

CSPC61	Embedded Systems and Architecture	3 credits
CSPC62	Compiler Design	4 credits
CSPC63	Principles of Cryptography	3 credits

Laboratory Courses

CSLR61	Embedded Systems Laboratory	2 credits
CSLR62	App Development Laboratory	2 credits
CSPC54	Compilers Laboratory (Theory + Lab integrated)	[4 credits]

Institute Requirement Course

CSIR61	Industrial Lecture	1 credit
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Humanities Department Course

HSIR14	Professional Ethics	3 credits
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Programme Electives

CSPE61	Web Technology and its Applications	3 credits
CSPE64	Data Analytics	3 credits
CSPE65	Machine Learning Techniques and Practices	3 credits

NPTEL Courses

CSOC13	GPU Architectures and Programming	3 credits
CSOC14	Foundations of Cyber Physical Systems	3 credits
CSOC15	Blockchain and its Applications	3 credits

Total Credits = (3+4+3) + (2+2) + (1) + (3) + (3+3) = 10+4+1+3+6 = **24 credits**

In case you are doing an extra elective, 24 + 3 = **27 credits**

B. Guide to choose number of electives per semester

- *Minimum Electives:* In Semester 6, you are required to choose a *minimum* of 2 electives.
- *When to overwork yourself in the 3rd year:* If you are planning to go for higher studies, and need to do research extensively, and dedicate time towards preparing for competitive examinations like GATE and GRE, it is advised to take 3 electives now, in order to be able to dedicate adequate time in your 4th year.
- *When to chill and take it slow:* If you are planning to get placed immediately after college, please chill in your 3rd year, and do not rush up courses. Your 3rd year will already be extremely hectic. Focus on getting yourself a good

internship offer, and once you get an internship, put full efforts in converting that into a PPO offer, so that your 4th year can be relatively tension free. Then, you can invest time in finishing your electives requirement during your 4th year.

C. Guide for choosing and studying electives (restricted to those offered by the CSE Department)

- Summary: Ensure that you take at least *one PE*, and the other one can be another PE or an NPTEL or an elective from another department, known as an *open elective*.
 - Web Technology and its Applications: This is the easiest elective among all electives. A corresponding laboratory course is also offered. You only have to mug up certain code formats that are exclusively given by the professor. Proper understanding of the theory course and implementation in the laboratory will easily fetch a good grade.
 - Data Analytics: This elective comprises of concepts that require a lot of practice. Lot of mathematical calculations will be done while solving questions. It is highly recommended to sharpen your solving skills and increase computational speed. To have a better understanding of the concept, please ensure you CODE all the concepts in the course (even though you aren't officially required to do so) – this will help in better understanding of the concept as well as checking your answers by inputting values into the code that will automatically do the calculations for you and show the steps and final result. Overall, ensure you practice well.
Link to Sivasankar sir's online lectures: [CSPE64 Data Analytics Sivasankar Sir](#)
 - Machine Learning Techniques and Practices: This elective also comprises of a lot of numerical questions which require extensive practice and calculations. A bit of theory will also have to be learnt. Ensure you study this subject thoroughly and ensure you learn to code all the concepts (whether or not it is required by your curriculum).
 - General advice while choosing open electives: Generally, open electives are chosen with the intent of chilling and getting a good grade. Before proceeding, remember to ask your seniors about a course before taking it – how the professor is, how strict is the professor about attendance, how the exams are, and how good the grading is. Another important advice is that your transcript will contain the list of courses you have taken – so take some good course that you will be proud of – which you can claim that it was really of use to you, in case someone asks. Do not take some random course that has no relationship with the department in which you are enrolled into for the sake of credit completion.
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D. Guide to study the Humanities Department's course – Professional Ethics

This course, named Professional Ethics, is a completely theory-based course. To excel in this course, my only advice would be to *mug up, sentence by sentence*, all content provided in the PPTs. Discuss the concepts in the power-points with your classmates much before the examination, so that it will be extremely easy for you to revise the concepts a day before the examination.

E. Guide for Industrial Lecture

Industrial Experts will be invited and made to deliver lectures on specific topics. Once each lecture is completed, a small examination will be conducted based on the content of the delivered lecture. Grading will be done based on the results of these examinations.

F. Guide to study programme core courses

- Embedded Systems and Architecture: This is a completely theoretical subject. Ensure you go through the prescribed textbook. Study all book back questions, and ensure you study class notes properly before appearing for examinations.

[Textbook attached]

- Compiler Design: This is the most interesting and important course of this semester. It involves a heavy mix of concepts and theory.

Study Mechanism: Follow the below stated steps in order to excel in this course.

1. Neso Academy – Please do not hesitate to purchase this subscription. The premium content provided is awesome, and covers most of the concepts. Start your preparation by watching these videos – this will create a base in your mind for most of the concepts.
2. Class Power Points – Once your base has been established, study the PPTs one by one. Some concepts would have already been covered by Neso, while some others have to be learnt from YouTube / manual studying of the PPTs (this would be difficult without the base created by Neso).
3. Class Notes – Once PPTs have been studied, revise class notes to cover any extra theory concept covered in class.
4. Previous year GATE questions – Solve all previous year GATE questions to ensure your expertise in this domain.

Practice: In almost all concepts, extensive practice is required to achieve mastery. Try googling random problems on the internet, and solving them, to increase your skill in this subject.

Link to Neso Academy's Compiler Design Lectures: [Compiler Design by Neso](#)

[Notes and PowerPoints attached]

- Principles of Cryptography: This is a very interesting subject, especially for people who relish mathematical concepts. Follow the same steps as above – Neso, PPTs, Class Notes and GATE questions. You need to have a lot of practice in Mathematical concepts to ensure speed and accuracy in the examination. Overall, this will be an easier subject when compared to the others in this semester.

Link to Neso Academy's Cryptography Lectures: [Cryptography by Neso](#)

[Notes and PowerPoints attached]

G. Guide for laboratory courses

- Embedded Systems Laboratory: This is a laboratory which hardware lovers will enjoy the most – it will consist of a combination of wirings with lot of sensors, and also coding them to achieve various tasks.

What this lab is all about: This laboratory is all about understanding and working with various hardware components – including LEDs, alarms and various types of sensors like touch sensor, pressure sensor, force sensor, etc. Each laboratory will have a problem statement that will enable the use of a particular hardware device, that has to be programmed to achieve a particular task.

How to approach this lab: In each laboratory, ensure that you learn the code properly for each sensor. *Understand* the codes, and please *do not mug* any piece of code. You will not be able to approach any new problem statement that you might be asked to solve in an examination if you only mug up codes.

Experimentation: After the initial few laboratories, once you get familiar with the working of the devices, try exploring your own problem statements.

Experimentation and familiarization with the devices and codes is the key to unlocking the secrets behind this laboratory's mysteries. By doing so, not only are you scoring grades, but also learning a lot of new concepts.

[Lab Questions with Solutions are attached]

- App-Development Laboratory: This laboratory covers both web-development and app-development.

What this lab is all about: In each lab, you will be given some problem statement, that requires knowledge in *HTML, CSS, JavaScript, PHP, MySQL, Android Studio*, and so on. You will have to write the code, and show the output to the verifier in each lab.

How to approach this lab: Learn the particular concept beforehand to ensure you can solve the questions in time. Store all your codes in a GitHub repository, so that you can keep track of it, so that you can study easily for your end-sems.

[My Lab Questions are attached]

Dear Juniors,

With this, I would like to conclude the document. I wish you all the best for your 6th semester [and the upcoming semesters].

Wishing you guys all the best for your upcoming CPC examinations! Hope all of you pass the examinations with flying colours!

For any issues, feel free to contact me anytime [my number: +917010460164]. I prefer introduction via text and if needed, you can also call anytime. Once again, all the best!
