



### About "**Analysis of Algorithms**"

1. The subject **AOA** deals with designing efficient algorithms (or programs). By efficient, I mean those programs which take relatively lesser time to execute.
2. In the real world, there are often many programs which give the same output given the same input. For example Bubble sort and Quick sort both do the work of sorting. But did you know that Bubble sort is never used in real world since it is highly inefficient? Hence, the real challenge lies in using that program which produces the required output in **minimum** time.
3. This subject is a combination of Mathematics and Programming. For every topic in this subject, we will first study a program, then its working and finally we will apply some mathematical concepts to find **complexity** of the program. Complexity of a program is defined as its execution time.

### **Importance of this Subject**

1. If you aspire working for **dream** companies (Google, Amazon, J.P. Morgan, Facebook, Tibco, PlayGames24x7, IndusValley) after you B.E. then it is very essential that you have sound knowledge of this subject. Good knowledge of this subject will also help you in your M.S., M.E. or M. Tech. If you plan to give GATE after you B.E. then your concepts of AoA should be very clear.
2. There are certain sites where you can find **placement questions** of different companies. For eg. <http://placement.freshersworld.com/placement-papers/Google/Placement-Paper-Question-Paper-43997>
3. If you ever go through questions of companies like Google or the ones mentioned above, you will see that the **first set of questions** are always on topics like "complexity", "Big-Oh" " $O()$ ", "Big Omega", "Recurrence Relationship", "Efficiency" , "Spanning Trees" , "Graphs", "Dynamic Programming", "Greedy Method", "Divide and Conquer" etc. All these topics are part of AOA syllabus.
4. And do you know why these concepts are so important for these companies? That's because these dream companies don't simply want engineers who can code. They want engineers who can code **efficient programs** i.e. the ones which take minimum time to execute.
5. Take Google's example. If you search Google for a query, Google's concern is not only to give you right answer but also to give you that answer **as fast as possible**. If Google uses an inefficient searching algorithm like "Linear Search", you would get your results may be after 15 minutes. Would you wait that much? Would you then ever use Google? Definitely not !!
6. Similarly, take example of e-commerce sites like **Flipkart** or **Amazon** which offer sale on their websites almost every day. Take example of Flipkart's "**Big Billion Day**" sale. On such a day, with millions of customers searching Flipkart's site for various products, Flipkart would want to give you your desired result in shortest possible time. And if it does not do that, you will most likely switch Amazon. After all, who has time ??

### **Misconception**

1. The first few topics of this subject are Quick Sort, Merge Sort, Selection Sort, Insertion sort and Binary Search. These topics were there in semester 3 also and that's why many students have a misconception that this subject is almost same as Data Structures.
2. However, these topics constitute hardly 5% of AOA syllabus. And in this 5% also, importance is given to "Analysis" which you have never done in semester 3.

**AOA** is for 4<sup>th</sup> Semester COMP students of MU and for COMP & I.T. students of S.P.I.T & K.J.Somaiya, Vidyavihar.

**1) MULUND** - Every Sunday - 8 to 11.30 AM starting on 13<sup>th</sup> January 2019.

**2) VASHI** - Every Sunday – 3.30 to 7 PM starting on 13<sup>th</sup> January 2019.

**3) BORIVALI** - Every Friday – 6.15 to 9.45 PM starting on 18<sup>th</sup> January 2019.

**4) Video Lecture Course** – Can be taken in any of the above 3 centers. Call us to know more.

**AOA Fees:** 9500.

**Early Bird Discount:** 2000 if admission is taken till 15<sup>th</sup> November.

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### **AUTOMATA THEORY batches – by Ganesh Sir – Sem 4 – I.T.**

**1) MULUND** - Every Saturday – 6.30 to 9.30 PM starting on 12<sup>th</sup> January 2019.

**2) VASHI** - Every Sunday – 8.30 to 11.30 AM starting on 13<sup>th</sup> January 2019.

**Fees:** 7500. **Early Bird Discount:** 2000 if admission is taken till 15<sup>th</sup> November.

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### **PYTHON PROGRAMMING batch – by Ganesh Sir – Sem 4 – COMP & IT**

**MULUND** - Every Sunday – 12.30 to 3.30 PM starting on 13<sup>th</sup> January 2019.

**Fees:** 5500. **Early Bird Discount:** 2000 if admission is taken till 15<sup>th</sup> November.

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### ***The Path Ahead...***

Considering the worsening job scenario & increasing competition, it is always better to keep oneself updated with all the latest technologies & in demand skills. To stay ahead in the race, one should definitely do the following two courses. These two courses will not only help you in your placements and MS admissions, but will also help you in your final year project.

<b>Internet Programming</b>	This is probably one of the best subjects which MU has kept in semester 5. In this subject, you will be learning technologies like Javascript (which has nothing to do with java), HTML5, CSS, PHP, AJAX, JSON, XML etc. Knowing this subject very well will not only help you in your exam but will also make you JOB-READY.
<b>Oracle Certified Java Professional (OCJP)</b>	This is an online certification exam on Java conducted by Oracle. Like GRE, its score is internationally accepted. Remember you will never be giving any theory exam on java. Hence, a good score in this exam will put you ahead of others in job interviews & MS admissions.
<b>These two courses will be taken by Sandeep Sir AFTER Semester 4</b>	