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**THE NATIONAL COLLEGE BASAVANAGUDI, BENGALURU- 04**  
**AUTONOMOUS**

Website: [www.ncbgudi.com](http://www.ncbgudi.com)

## DEPARTMENT OF COMPUTER SCIENCE

# BOS

### *Proceedings*

Sl. No.	Particulars	Page Number
1.	BOS Proceeding Year 2019-20	2
2.	BOS Proceeding Year 2018-19	10
3.	BOS Proceeding Year 2017-18	19
4.	BOS Proceeding Year 2016-17	28
5.	BOS Proceeding Year 2015-16	37

## Meeting Notice

25-06-2019

To  
BOS Member

Dear Sir/madam,

Subject: Meeting of the Board of Studies in Computer Science(PG)

We are pleased to inform you that the Meeting of the Board of Studies in Computer Science(PG) is being arranged for Saturday, the 13<sup>th</sup> July 2019 at 11 a.m. in the department of Computer Science , The National College Autonomous, Basavanagudi, Bangalore – 560 004, to review and update the existing III & IV semesters M.Sc Computer Science syllabi. In this regard your expertise and advice is most essential.

We request you to kindly make it convenient to attend the meeting.

Meeting Agenda:

1. Proceeding of previous BOS meeting held on 28-08-2018.
2. Review of all four semesters course structure in Choice-Based Credit system pattern.
3. Review of the Syllabus of the Courses existing III & IV Semesters.
4. Approval of Panel of External Examiners and Board of Examiners.
5. Any other subject.

Thanking you,

Yours sincerely,

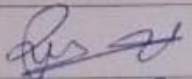
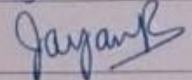
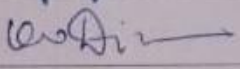
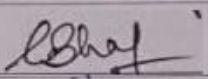
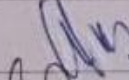
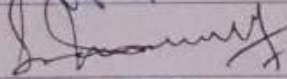
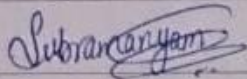
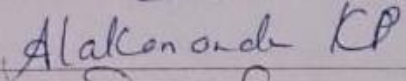
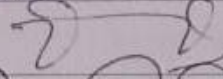
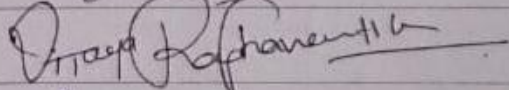
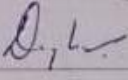
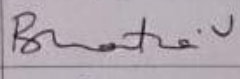
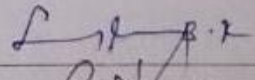
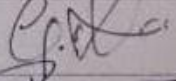
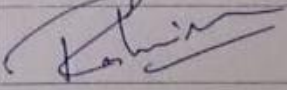


Chairperson  
Ravi Hegde

THE NATIONAL COLLEGE  BASAVANAGUDI, BANGALORE-4  
AUTONOMOUS

**Department of Computer Science**  
**Board of Studies in Computer Science(PG)**

The meeting of the Board of Studies(PG) in Computer Science was held on July 13<sup>th</sup> 2019, Saturday at 11 a.m. in the department.

Sl.No	Members Name	Signature
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	
2.	Dr. Jayant Haritsa University Nominee	
3.	Dr. K.V Dinesha Subject Expert	
4.	Sri. K.S.G.Shankar Industrial Representative	
5.	Prof. P.G. Bhat Subject Expert	
6.	Dr. M.S. Shashidhar Subject Expert	
7.	Prof. BalasubrahmanyaNagarajaMasti Subject Expert	
8.	Sri. Subramanyam C . S Alumnus of the college	
9.	Prof. K.P. Alakananda Member	
10.	Prof. B.G. Jagadeesha Member	
11.	Prof. VijayaRaghavan H.G Member	
12.	Prof. Divyashree. N Member	
13.	Prof. Bharath V Member	
14.	Prof. Sangeetha B.K Member	
15.	Prof. Satish Kumar G Member	
16.	Prof. Rashmi M Member	

### Board of Studies in Computer Science(PG)

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Sl.No	Members Name	Address
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National College Basavanagudi, Bangalore-560 004
2.	Dr. Deepa Shenoy University Nominee	Professor, Department of Computer Science, UVCE,Bangalore University,Bangalore.
3.	Dr. K.V Dinesha Subject Expert	Professor, Institute of Information Technology, Bangalore. dinesha@iitb.ac.in
4.	Dr. Jayant Haritsa Subject Expert	Chairman, Dept. of Computer Science and Automation, Indian Institute of Science, Bangalore
5.	Prof. P.G. Bhat Subject Expert	Visiting Professor, National College Basavanagudi
6.	Dr. M.S. Shashidhar Subject Expert	HOD of Computer Science The Oxford College of Engineering, Bangalore-68:msshashidhara@gmail.com
7.	Mr. BalaSubramanya Masti Subject expert	Entrepreneur and Free Lance Expert
8.	Sri. Subramanyam C . S Alumnus of the college	Engineering Lead, EVER TEAM, Hosur Main Road,Koramangal ,Bangalore subramanyamcs@gmail.com
9.	Prof. K.P. Alakananda	Lecturer, National College, Basavanagudi
10.	Prof. B.G. Jagadeesha	Lecturer, National College, Basavanagudi
11.	Prof. Vijaya Raghavan H.G	Lecturer, National College, Basavanagudi
12.	Prof. Divyashree. N	Lecturer, National College, Basavanagudi
13.	Prof. Bharath V	Lecturer, National College, Basavanagudi
14.	Prof. Sangeetha B.K	Lecturer, National College, Basavanagudi
15.	Prof. Satish Kumar G	Lecturer, National College, Basavanagudi
16.	Prof. Rashmi M	Lecturer, National College, Basavanagudi

### Proceedings of the meeting

Mr. Ravi Hegde welcomed the BOS members ,extended thanks for having framed M.Sc 1st and 2nd semester syllabus last year which was very much appreciated.

Dr. Jayant Haritsa advised to improvise Unit V in Big data analytics since topics looks more like old fashioned statistics and not like analysis, he also suggested to add more of analytical tools to C11: Big Data Analytics and change the title to C11- Introduction to Big Data Analytics. He suggested the students should gain hands-on experience on large-scale analytics tools to solve some big data problems further understanding the impact of big data for business decisions and strategy makes it very important for the student.

Dr. M.S. Shashidhar suggested to add online certificate course which can help creating employment opportunities for the students.

Dr. Jayant Haritsa supporting to the point also suggested to add online certificate course as part of assignment since assignment carries marks.

Mr. Subramanya, Student representative suggested to choose Machine Learning as elective2 since python is part of syllabus in 1st semester. AS the Industry urges skills ,where categorizing an AI problem based on its characteristics and its constraints and should be able to learn different logic formalisms and decision taking in planning problems

Dr. Jayant Haritsa also advised to introduce Machine Learning as elective2 instead of C13: User Interface Design and also suggested to add Logistic Regression by dropping Unit-IV in Machine Learning. Students should have a glance at machine learning algorithms and extracting knowledge models from data.

Dr. Dinesha suggested to use andruins method which will help students from industry perspective. He added in the Android labs students should acquire the knowledge to build the Android application for smart phone by writing programs for shared preference and fragment.

Mr. Subramanya also suggested to introduce mini project as part of academic in 3rd semester, supporting to the point Dr. Jayant Haritsa and Dr. Dinesha suggested to add mini project in J2EE as L6. On completion of the course, the students acquire the knowledge to apply various analytics functions to extract useful information

The BOS committee decide to have Mini project as L6 instead of Big Data Practical Lab in the 3rd Semester and C13: Machine Learning as elective2 instead of User Interface Design.

Dr. Jayant Haritsa advised to rename C13 : Machine Learning to Practical Machine Learning and concentrate more on skillset, he also said to remove Unit-V and Language Learning in Unit-VI.

Dr. Jayant Haritsa and Dr. Dinesha suggested to drop Compiler Design and Performance Modeling and also advised to change C14: High Performance Computing and Cloud Computing as Big Data Platform which should show importance of various cloud computing service and there implementation. The student should be able to understand the virtualization technologies and there implementation.

Mr. Ravi Hegde thanked all the members for sparing their valuable time in designing of a powerful syllabus.

The proposed and approved patterns of the courses and are enclosed in Annexure 1

The list of the Members of the BOE was approved by the Board, enclosed in Annexure 2.



Ravi Hegde  
Chairperson

Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
Basavangudi, Bangalore-560004

Annexure 1

## Postgraduate Course in Computer Science Course Structure

Subjects	Papers	Credits
Hard Core Theory	15	60
Soft Core Theory	3	6
Practical	7	28
Project work	1	8
Open Elective	1	2
<b>Total</b>	<b>27</b>	<b>104</b>

### I Semester

**The National College, Autonomous, Basavanagudi, Bengaluru-04**

Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C1	Object Oriented Analysis and Design	4	30	70	100	4
C2	Design and Analysis of Algorithms	4	30	70	100	4
C3	Database Management Systems	4	30	70	100	4
C4	Python Programming	4	30	70	100	4
C5	Statistics	4	30	70	100	4
L1	Python lab	6	30	70	100	4
L2	DBMS Lab	6	30	70	100	4
S1	Complementary skills I	2	15	35	50	2
<b>Total Credit</b>					<b>750</b>	<b>30</b>

**II Semester**

Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C6	Software Testing	4	30	70	100	4
C7	Data Mining	4	30	70	100	4
C8	Enterprise Application Development	4	30	70	100	4
C9	Operating Systems and Network Programming	4	30	70	100	4
C10	<b>Elective 1 (one of the following)</b>	4	30	70	100	4
	Cryptography and Security					
	Artificial Intelligence					
	Advanced Computer Networks					
L3	Enterprise Application Lab	6	30	70	100	4
L4	Network Programming and design Lab	6	30	70	100	4
S2	Complementary skills II	2	15	35	50	2
<b>Total Credit</b>					<b>750</b>	<b>30</b>

**III Semester**

Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C11	Data Science	4	30	70	100	4
C12	Web Application Development with Android	4	30	70	100	4
C13	<b>Elective 2 (one of the following)</b>	4	30	70	100	4
	Practical Machine Learning					
	Embedded Systems					
	User Interface Design					
C14	<b>Elective 3 (one of the following)</b>	4	30	70	100	4
	Big Data Platform					
	Compiler Design					
	Performance Modeling					

**The National College, Autonomous, Basavanagudi, Bengaluru-04**

	Social Networks					
L5	Android and User Interface Lab	6	30	70	100	4
L6	Mini Project	6	30	70	100	4
S3	Complementary skills III	2	15	35	50	2
OE	Open Elective	2	15	35	50	2
<b>Total Credit</b>					<b>700</b>	<b>28</b>

<b>IV Semester</b>						
<b>Course</b>	<b>Title of the Paper</b>	<b>Hours /Week</b>	<b>Marks</b>			<b>Credits</b>
			<b>IA</b>	<b>Exam</b>	<b>Tot</b>	
C15	Internet of Things	4	30	70	100	4
L7	Internet of Things Lab	6	30	70	100	4
P1	Project work	16	120	280	400	8
<b>Total Credit</b>					<b>600</b>	<b>16</b>

**Annexure 2.**

The following list of the Board of Examiners was approved by the Board:

<b>Sl.No</b>	<b>Members Name</b>	<b>Address</b>
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National Degree College Basavanagudi, Bangalore
2.	Dr. K.V Dinesha Member	Professor, Institute of Information Technology, Bangalore.
3.	Prof. P.G. Bhat Member	Visiting Professor, NCB
4.	Prof. Raghavaendra H G External Member	Professor, Sir M Visvesvaraya Institute of Technology, Bangalore.
5.	Smt. Alakananda.K.P	Lecturer, National College Basavanagudi
6.	Sri. Jagadeesh B.G	Lecturer, National College Basavanagudi
7.	Prof. Vijayaraghavan	Lecturer, National College Basavanagudi
8.	Prof. Sangeetha B.K	Lecturer, National College Basavanagudi
9.	Prof. Satish Kumar G	Lecturer, National College Basavanagudi
10.	Prof. Divyashree N	Lecturer, National College Basavanagudi
11.	Prof. Rashmi M	Lecturer, National College Basavanagudi

The following list of the External Examiners was approved by the Board:

<b>Sl.No</b>	<b>Members Name</b>	<b>Address</b>
1.	Dr. Gundu Rao	Assoc. Professor Vijaya College Basavanagudi, Bangalore
2.	Dr. Anil Kumar	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce, Shavige Malleshwara Hills, Kumaraswamy Layout, B-78.
3.	Dr. Manjunath Rao	Assoc. Professor, Dept. of MCA, Ambedkar college of Engineering
4.	Dr. Gurunath R	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce, Shavige Malleshwara Hills, Kumaraswamy Layout, B-78.



**The National College, Autonomous, Basavanagudi, Bengaluru-04**

5.	Prof. Raghavaendra H G	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
6.	Prof. Vasanth S	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
7.	Prof. Manikanta K	Asst. Prof. Al-Amen College of Information Science, K.H.Road,Bangalore
8.	Prof. Sunil R.D.	The Oxford College , Bangalore
9.	Prof. Mamatha B G	Acharya Institute of Technology, Bangalore
10.	Prof. A.G Vishwanatha	BIT College , VV Puram



Ravi Hegde  
Chairperson

Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
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## DEPARTMENT OF COMPUTER SCIENCE

# BOS

*Proceedings*

**28<sup>th</sup> August 2018**

## Meeting Notice

05-08-2018

To  
BOS Member

Dear Sir/madam,

Subject: Meeting of the Board of Studies in Computer Science(PG)

We are pleased to inform you that the Meeting of the Board of Studies in Computer Science(PG) is being arranged for Tuesday, the 28<sup>th</sup> August 2018 at 11 a.m. in the department of Computer Science , The National College Autonomous, Basavanagudi, Bangalore – 560 004, to review and update the existing I & II semesters M.Sc Computer Science syllabi. In this regard your expertise and advice is most essential.

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2. Review of all four semesters course structure in Choice-Based Credit system pattern.
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5. Any other subject.

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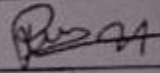
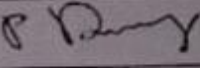
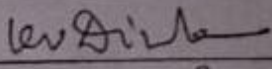
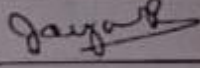
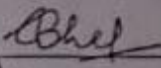
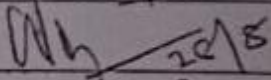
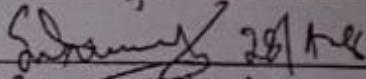
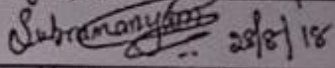
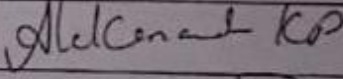
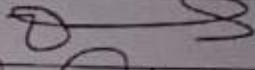
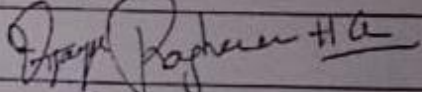
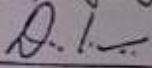
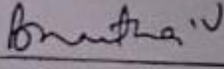
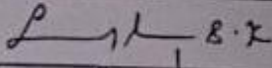
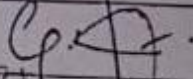
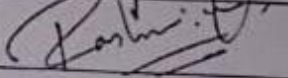
Yours sincerely,



Chairperson  
Ravi Hegde

### Proceedings of the meeting

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Sl.No	Members Name	Signature
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7.	Mr. BalaSubramanya Masti Subject expert	Entrepreneur and Free Lance Expert
8.	Sri. Subramanyam C . S Alumnus of the college	Engineering Lead, EVER TEAM, Hosur Main Road,Koramangal ,Bangalore subramanyamcs@gmail.com
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### Proceedings of the meeting

Mr. Ravi Hegde welcomed the BOS members ,extended thanks for having framed M.Sc syllabus last year which was very much appreciated.

Dr. Dinesha suggested the Introduction to Python programming , which is most sought in the industry. The Course on this should be very strong in creating employment opportunities for the students. Interpret the fundamental Python

syntax, semantics and be fluent in the use of Python control flow statements and express proficiency in the handling of strings and functions.

Dr. M.S. Shashidhar, also stressed upon Python Programming, Prof. BalaSubramanya Masti , suggested to introduce Python with Statistics.

The BOS committee decide to have Python Programming as C4 instead of Software Development Process (SDP) in the 1st Semester. It is important to determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets was decided.

Prof.P.G.Bhat suggested to redesign OOAD and SDP to combine the subject .He spoke the importance of both and requirement and hence the combination should be made. Have a working ability and grasping attitude to design and conduct object-oriented analysis and design experiments using UML, as well as to analyze and evaluate their model and a capacity to analyze and design software systems, components to meet desired needs should be sought.

Dr. M.S. Shashidhar, suggested to start the syllabus with SDP and end with OOAD by having ,1st unit SDP concepts and remaining units as OOAD concepts. The Board agreed the same with the title as OOAD.

The BOS committee suggested to have L1: Python Lab instead of Design Lab. Students should be able to create, run and manipulate Python Programs using core data structures like Lists and demonstrate proficiency in handling Strings and File Systems.

From the student perspective, the design lab and implementation of algorithms is required and hence in the 2<sup>nd</sup> semester L4: Network Programming lab can be combined with design lab, to still retain the concept of design lab. The students acquire the knowledge to build the logic and develop a solution for a Network related problem statement using C on Linux and windows platform and also algorithm like dynamic programming and backtracking analysis of time complexity.

Mr. Subramanya, Student representative wanted to have some hot selling concepts in C8: Enterprise Application Development such as

- a. Spring Boot
- b. Micro services

Mr. Subramanya also suggested to introduce Spring boot lab programs for Restful web services in L3 : Enterprise Application Development Lab .

To introduce the Spring Boot concept in lab he suggested to have mini project on Bootstrap combined with Spring Boot for Restful web services to fetch data.

Describing and demonstrating basic data mining algorithms, methods, and tools and identifying business applications of data mining was most sought out in industries.

Dr. Dinesh supporting to the point also suggested that Micro services was required by the Industry point of view.

Mr. Ravi Hegde thanked all the members for sparing their valuable time in designing of a powerful syllabus.

The proposed and approved patterns of the courses and are enclosed in Annexure 1

The list of the Members of the BOE was approved by the Board, enclosed in Annexure 2.



Ravi Hegde  
Chairperson

Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
Basavangudi, Bangalore-560004

### Annexure 1

## Postgraduate Course in Computer Science Course Structure

Subjects	Papers	Credits
Hard Core Theory	15	60
Soft Core Theory	3	6
Practical	7	28
Project work	1	8
Open Elective	1	2
<b>Total</b>	<b>27</b>	<b>104</b>

### I Semester

Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C1	Object Oriented Analysis and Design	4	30	70	100	4
C2	Design and Analysis of Algorithms	4	30	70	100	4
C3	Database Management Systems	4	30	70	100	4
C4	Python Programming	4	30	70	100	4
C5	Statistics	4	30	70	100	4
L1	Python lab	6	30	70	100	4

**The National College, Autonomous, Basavanagudi, Bengaluru-04**

L2	DBMS Lab	6	30	70	100	4
S1	Complementary skills I	2	15	35	50	2
<b>Total Credit</b>					<b>750</b>	<b>30</b>

**II Semester**

Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C6	Software Testing	4	30	70	100	4
C7	Data Mining	4	30	70	100	4
C8	Enterprise Application Development	4	30	70	100	4
C9	Operating Systems and Network Programming	4	30	70	100	4
C10	<b>Elective 1 (one of the following)</b>	4	30	70	100	4
	Cryptography and Security					
	Artificial Intelligence					
	Advanced Computer Networks					
L3	Enterprise Application Lab	6	30	70	100	4
L4	Network Programming and design Lab	6	30	70	100	4
S2	Complementary skills II	2	15	35	50	2
<b>Total Credit</b>					<b>750</b>	<b>30</b>

**III Semester**

Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C11	Big Data Analytics	4	30	70	100	4
C12	Web Application Development with Android	4	30	70	100	4
C13	<b>Elective 2 (one of the following)</b>	4	30	70	100	4
	Machine Learning					
	Embedded Systems					
	User Interface Design					
C14	<b>Elective 3 (one of the following)</b>	4	30	70	100	4
	High Performance Computing and Cloud Computing					
	Compiler Design					
	Performance Modeling					
	Social Networks					
L5	Android and User Interface Lab	6	30	70	100	4
L6	Big data Practical Lab	6	30	70	100	4
S3	Complementary skills III	2	15	35	50	2
OE	Open Elective	2	15	35	50	2
<b>Total Credit</b>					<b>700</b>	<b>28</b>



IV Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C15	Internet of Things	4	30	70	100	4
L7	Internet of Things Lab	6	30	70	100	4
P1	Project work	16	120	280	400	8
<b>Total Credit</b>					<b>600</b>	<b>16</b>

**Annexure 2.**

The following list of the Board of Examiners was approved by the Board:

Sl.No	Members Name	Address
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National Degree College Basavanagudi, Bangalore
2.	Dr. K.V Dinesha Member	Professor, Institute of Information Technology, Bangalore.
3.	Prof. P.G. Bhat Member	Visiting Professor, National College, Jayanagar
4.	Prof. Raghavaendra H G External Member	Professor, Sir M Visvesvaraya Institute of Technology, Bangalore.
5.	Smt. Alakananda.K.P Member	Lecturer, National College Basavanagudi
6.	Sri. Jagadeesh B.G Member	Lecturer, National College Basavanagudi
7.	Prof. Vijayaraghavan Member	Lecturer, National College Basavanagudi
8.	Prof. Sangeetha B.K Member	Lecturer, National College Basavanagudi
9.	Prof. Satish Kumar G Member	Lecturer, National College Basavanagudi
10.	Prof. Divyashree N Member	Lecturer, National College Basavanagudi
11.	Prof. Rashmi M Member	Lecturer, National College Basavanagudi

The following list of the External Examiners was approved by the Board:

Sl.No	Members Name	Address
1.	Dr. Gundu Rao	Assoc. Professor Vijaya College Basavanagudi, Bangalore
2.	Dr. Anil Kumar	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce , Shavige Malleshwara Hills, Kumaraswamy Layout, B-78.
3.	Dr. Manjunath Rao	Assoc. Professor, Dept. of MCA, Ambedkar college of Engineering
4.	Dr. Gurunath R	Asst. Professor, Dept. of Computer Science,

**The National College, Autonomous, Basavanagudi, Bengaluru-04**

		Dayananda Sagar College of Art Science & Commerce ,Shavige Malleshwara Hills, Kumaraswamy Layout,B-78.
5.	Prof. Raghavaendra H G	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
6.	Prof. Vasanth S	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
7.	Prof. Manikanta K	Asst. Prof. Al-Amen College of Information Science, K.H.Road,Bangalore
8.	Prof. Sunil R.D.	The Oxford College , Bangalore
9.	Prof. Mamatha B G	Acharya Institute of Technology, Bangalore
10.	Prof. A.G Vishwanatha	BIT College , VV Puram



Ravi Hegde  
Chairperson

Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
Basavangudi, Bangalore-560004



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☎ 080-26674441

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Website: [www.ncbgudi.com](http://www.ncbgudi.com)

## DEPARTMENT OF COMPUTER SCIENCE

# BOS

*Proceedings*

**19<sup>th</sup> August 2017**

## Meeting Notice

03-08-2017

To  
BOS Member

Dear Sir/madam,

Subject: Meeting of the Board of Studies in Computer Science(PG)

We are pleased to inform you that the Meeting of the Board of Studies in Computer Science(PG) is being arranged for Saturday, the 19<sup>th</sup> August 2017 at 11 a.m. in the department of Computer Science , The National College Autonomous, Basavanagudi, Bangalore – 560 004, to review and update the existing III & IV semesters M.Sc Computer Science syllabi. In this regard your expertise and advice is most essential.

We request you to kindly make it convenient to attend the meeting.

Meeting Agenda:

1. Proceeding of previous BOS meeting held on 17-08-2016.
2. Review of all four semesters course structure in Choice-Based Credit system pattern.
3. Review of the Syllabus of the Courses existing III & IV Semesters.
4. Approval of Panel of External Examiners and Board of Examiners.
5. Any other subject.

Thanking you,

Yours sincerely,

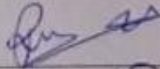
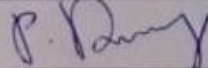
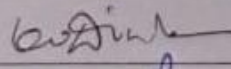
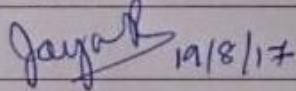
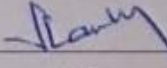
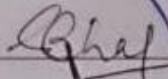
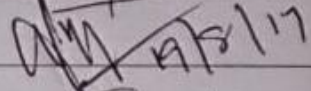
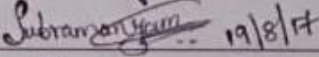
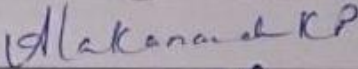
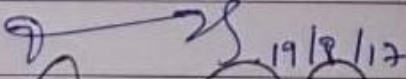
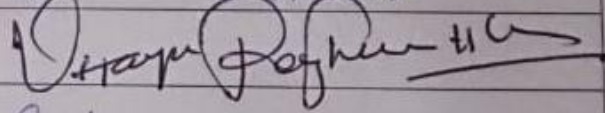
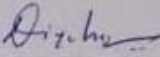
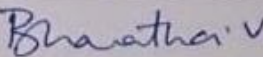
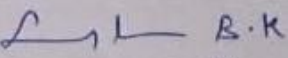
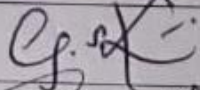



Chairperson  
Ravi Hegde

  
**THE NATIONAL COLLEGE** **BASAVANAGUDI, BANGALORE-4**  
**AUTONOMOUS**

**Department of Computer Science**  
**Board of Studies in Computer Science(PG)**

The meeting of the Board of Studies(PG) in Computer Science was held on August 19<sup>th</sup> 2017, Saturday at 11 a.m. in the department.

Sl.No	Members Name	Signature
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	
2.	Dr. Deepa Shenoy University Nominee	
3.	Dr. K.V Dinesha Subject Expert	
4.	Dr. Jayant Haritsa Subject Expert	 19/8/17
5.	Sri. K.S.G.Shankar Industrial Representative	
6.	Prof. P.G. Bhat Subject Expert	
7.	Dr. M.S. Shashidhar Subject Expert	 19/8/17
8.	Sri. Subramanyam C. S Alumnus of the college	 19/8/17
9.	Prof. K.P. Alakananda	 Alakananda KP
10.	Prof. B.G. Jagadeesha	 19/8/17
11.	Prof. Vijaya Raghavan H.G	
12.	Prof. Divyashree. N	
13.	Prof. Bharath V	 Bharath V
14.	Prof. Sangeetha B.K	 S.L B.K
15.	Prof. Satish Kumar G	
16.	Prof. Rashmi M	 Rashmi M

### Board of Studies in Computer Science(PG)

The meeting of the Board of Studies(PG) in Computer Science was held on August, 19<sup>th</sup> 2017, Saturday at 11a.m. in the department.

Sl.No	Members Name	Address
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National College Basavanagudi, Bangalore-560 004
2.	Dr. Deepa Shenoy University Nominee	Professor, Department of Computer Science, UVCE,Bangalore University,Bangalore.
3.	Dr. K.V Dinesha Subject Expert	Professor, Institute of Information Technology, Bangalore. dinesha@iitb.ac.in
4.	Dr. Jayant Haritsa Subject Expert	Chairman, Dept. of Computer Science and Automation, Indian Institute of Science, Bangalore
5.	Sri. K.S.G.Shankar Industrial Representative	I.T. Consultant, Former Vice-President and Chief Quality Officer, Symphony Services India Ltd. Bangalore.
6.	Prof. P.G. Bhat Subject Expert	Visiting Professor, National College Basavanagudi
7.	Dr. M.S. Shashidhar Subject Expert	HOD of Computer Science The Oxford College of Engineering, Bangalore-68:msshashidhara@gmail.com
8.	Mr. BalaSubramanya Masti Subject expert	Entrepreneur and Free Lance Expert
9.	Sri. Subramanyam C . S Alumnus of the college	Engineering Lead, EVER TEAM, Hosur Main Road,Koramangal ,Bangalore subramanyamcs@gmail.com
10.	Prof. K.P. Alakananda	Lecturer, National College, Basavanagudi
11.	Prof. B.G. Jagadeesha	Lecturer, National College, Basavanagudi
12.	Prof. Vijaya Raghavan H.G	Lecturer, National College, Basavanagudi
13.	Prof. Divyashree. N	Lecturer, National College, Basavanagudi
14.	Prof. Bharath V	Lecturer, National College, Basavanagudi
15.	Prof. Sangeetha B.K	Lecturer, National College, Basavanagudi
16.	Prof. Satish Kumar G	Lecturer, National College, Basavanagudi
17.	Prof. Rashmi M	Lecturer, National College, Basavanagudi

## **Proceedings of the meeting**

Mr. Ravi Hegde welcomed the BOS members ,extended thanks for having framed M.Sc 1st and 2nd semester syllabus last year which was very much appreciated.

Dr. Jayant Haritsa advised to improvise C11: Introduction to Big data Analytics to add understanding the impact of big data for business decisions and strategy and concepts such as collect, manage, store, query, and analyze various form of big data which would help in understanding the impact of big data for business decisions and strategy.

Dr. M.S. Shashidhar stressed upon Android should be used practically to develop Mobile applications on mobile platforms. Android app ecosystem is diverse and its usage is changing people lives. It clear that Android app development company which develops unique app is in huge demand and, a well-designed app is most important tool that person uses to access information. The Android development plays significant role was discussed by the members

Mr. Subramanya, Student representative suggested that the student should be able to model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model and write queries using SQL Server.

Dr. Jayant Haritsa also advised in carrying out the Project work the student should experience and learn the industry software development methodologies. It is a real-time development which involves all stages of Software development.

Dr. Dinesha said assignments is to analyze how much they have understood a specific topic or lesson. When a student doesn't get a clear understanding of a concept, they develop a weak foundation and based on that if they write something it reflects their lack of knowledge. He was supported by board members that assignments should be given.

Mr. Subramanya also suggested to introduce mini project as part of academic in 3rd semester, supporting to the point Dr. Jayant Haritsa and Dr. Dinesha suggested to add mini project in J2EE as L6.

The Board discussed the Open elective Web page Designing which is offered to other department students. The programme must consists of Creation of web page using word press. Student should be able to design a user friendly website using colors, images, accessibility and should be able to install a template, include plug-in. The student skill would enhance excellent visual design skills with sensitivity to user-system interaction. They will have the ability to solve problems creatively and effectively. Updates with the latest Web trends, techniques, and technologies

Mr. Ravi Hegde thanked all the members for sparing their valuable time in designing of a powerful syllabus.

The proposed and approved patterns of the courses and are enclosed in *Annexure 1*

The list of the Members of the BOE was approved by the Board, enclosed in *Annexure 2*.



Ravi Hegde  
Chairperson  
Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
Basavangudi, Bangalore-560004

### *Annexure 1*

## Postgraduate Course in Computer Science Course Structure

Subjects	Papers	Credits
Hard Core Theory	15	60
Soft Core Theory	3	6
Practical	7	28
Project work	1	8
Open Elective	1	2
<b>Total</b>	<b>27</b>	<b>104</b>

I Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C1	Object Oriented Analysis and Design	4	30	70	100	4
C2	Design and Analysis of Algorithms	4	30	70	100	4
C3	Database Management Systems	4	30	70	100	4
C4	Enterprise Software Development	4	30	70	100	4
C5	Statistics	4	30	70	100	4
L1	ADA Lab	6	30	70	100	4
L2	DBMS Lab	6	30	70	100	4
S1	Complementary skills I	2	15	35	50	2
<b>Total Credit</b>					<b>750</b>	<b>30</b>



II Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C6	Software Testing	4	30	70	100	4
C7	Data Mining	4	30	70	100	4
C8	Enterprise Application Development	4	30	70	100	4
C9	Operating Systems and Network Programming	4	30	70	100	4
C10	<b>Elective 1 (one of the following)</b>	4	30	70	100	4
	Cryptography and Security					
	Artificial Intelligence					
	Advanced Computer Networks					
L3	Enterprise Application Lab	6	30	70	100	4
L4	Network Programming and design Lab	6	30	70	100	4
S2	Complementary skills II	2	15	35	50	2
<b>Total Credit</b>					<b>750</b>	<b>30</b>

III Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C11	Big Data Analytics	4	30	70	100	4
C12	Web Application Development with Android	4	30	70	100	4
C13	<b>Elective 2 (one of the following)</b>	4	30	70	100	4
	Machine Learning					
	Embedded Systems					
	User Interface Design					
C14	<b>Elective 3 (one of the following)</b>	4	30	70	100	4
	High Performance Computing and Cloud Computing					
	Compiler Design					
	Performance Modeling					
	Social Networks					
L5	Android and User Interface Lab	6	30	70	100	4
L6	Big data Practical Lab	6	30	70	100	4
S3	Complementary skills III	2	15	35	50	2
OE	Open Elective	2	15	35	50	2
<b>Total Credit</b>					<b>700</b>	<b>28</b>

IV Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C15	Internet of Things	4	30	70	100	4
L7	Internet of Things Lab	6	30	70	100	4
P1	Project work	16	120	280	400	8
<b>Total Credit</b>					<b>600</b>	<b>16</b>

**Annexure 2.**

The following list of the Board of Examiners was approved by the Board:

Sl.No	Members Name	Address
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National Degree College Basavanagudi, Bangalore
2.	Dr. K.V Dinesha Member	Professor, Institute of Information Technology, Bangalore.
3.	Prof. P.G. Bhat Member	Visiting Professor, National College, Jayanagar
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7.	Prof. Vijayaraghavan Member	Lecturer, National College Basavanagudi
8.	Prof. Sangeetha B.K Member	Lecturer, National College Basavanagudi
9.	Prof. Satish Kumar G Member	Lecturer, National College Basavanagudi
10.	Prof. Divyashree N Member	Lecturer, National College Basavanagudi
11.	Prof. Rashmi M Member	Lecturer, National College Basavanagudi

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2.	Dr. Anil Kumar	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce , Shavige Malleshwara Hills, Kumaraswamy Layout, B-78.
3.	Dr. Manjunath Rao	Assoc. Professor, Dept. of MCA, Ambedkar college of

**The National College, Autonomous, Basavanagudi, Bengaluru-04**

		Engineering
4.	Dr. Gurunath R	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce ,Shavige Malleshwara Hills, Kumaraswamy Layout,B-78.
5.	Prof. Raghavaendra H G	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
6.	Prof. Vasanth S	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
7.	Prof. Manikanta K	Asst. Prof. Al-Amen College of Information Science, K.H.Road,Bangalore
8.	Prof. Sunil R.D.	The Oxford College , Bangalore
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10.	Prof. A.G Vishwanatha	BIT College , VV Puram



Ravi Hegde  
Chairperson

Board of Studies (PG) in Computer Science  
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## DEPARTMENT OF COMPUTER SCIENCE

# BOS

*Proceedings*

**27<sup>th</sup> August 2016**

## Meeting Notice

03-08-2016

To  
BOS Member

Dear Sir/madam,

Subject: Meeting of the Board of Studies in Computer Science(PG)

We are pleased to inform you that the Meeting of the Board of Studies in Computer Science(PG) is being arranged for Saturday, the 27<sup>th</sup> August 2016 at 11.30 a.m. in the department of Computer Science , The National College Autonomous, Basavanagudi, Bangalore – 560 004, to review and update the existing I & II semesters M.Sc Computer Science syllabi. In this regard your expertise and advice is most essential.

We request you to kindly make it convenient to attend the meeting.

Meeting Agenda:


1. Proceeding of previous BOS meeting held on 14-09-2015.
2. Review of all four semesters course structure in Choice-Based Credit system pattern.
3. Review of the Syllabus of the Courses existing I & II Semesters.
4. Approval of Panel of External Examiners and Board of Examiners.
5. Any other subject.

Thanking you,

Yours sincerely,



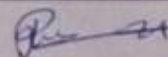
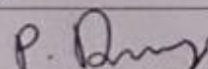
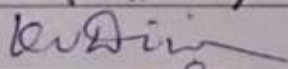
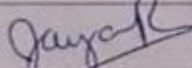
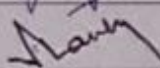
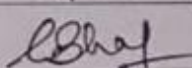
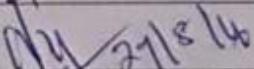
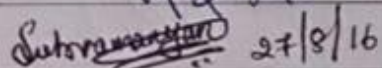
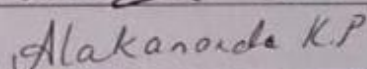
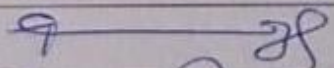
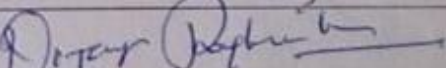
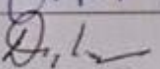
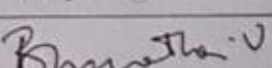
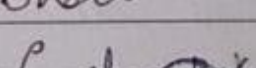
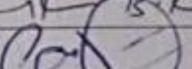
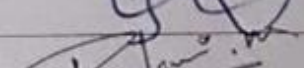
Chairperson  
Ravi Hegde

  
**THE NATIONAL COLLEGE BASAVANAGUDI, BANGALORE-4**  
**AUTONOMOUS**

**Department of Computer Science**

**Board of Studies in Computer Science(PG)**

The meeting of the Board of Studies(PG) in Computer Science was held on August 27<sup>th</sup> 2016, Saturday at 11.30 a.m. in the department.

Sl.No	Members Name	Signature
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	
2.	Dr. Deepa Shenoy University Nominee	
3.	Dr. K.V Dinesha Subject Expert	
4.	Dr. Jayant Haritsa Subject Expert	
5.	Sri. K.S.G.Shankar Industrial Representative	
6.	Prof. P.G. Bhat Subject Expert	
7.	Dr. M.S. Shashidhar Subject Expert	
8.	Sri. Subramanyam C . S Alumnus of the college	
9.	Prof. K.P. Alakananda	
10.	Prof. B.G. Jagadeesha	
11.	Prof. Vijaya Raghavan H.G	
12.	Prof. Divyashree. N	
13.	Prof. Bharath V	
14.	Prof. Sangeetha B.K	
15.	Prof. Satish Kumar G	
16.	Prof. Rashmi M	

**The meeting of the Board of Studies(PG) in Computer Science was held on August 27<sup>th</sup> 2016, Saturday at 11.30 a.m. in the department.**

**The following members were present during the meeting:**

Sl.No	Members Name	Address
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National College Basavanagudi, Bangalore-560 004
2.	Dr. Deepa Shenoy University Nominee	Professor, Department of Computer Science, UVCE,Bangalore University,Bangalore.
3.	Dr. K.V Dinesha Subject Expert	Professor, Institute of Information Technology, Bangalore. dinesha@iiitb.ac.in
4.	Dr. Jayant Haritsa Subject Expert	Chairman, Dept. of Computer Science and Automation, Indian Institute of Science, Bangalore
5.	Sri. K.S.G. Shankar Industrial Representative	I.T. Consultant, Former Vice-President and Chief Quality Officer, Symphony Services India Ltd. Bangalore.
6.	Prof. P.G. Bhat Subject Expert	Visiting Professor, National College Basavanagudi
7.	Dr. M.S. Shashidhar Subject Expert	HOD of Computer Science The Oxford College of Engineering, Bangalore-68:msshahidhara@gmail.com
8.	Sri. Subramanyam C . S Alumnus of the college	Engineering Lead, EVER TEAM, Hosur Main Road,Koramangal ,Bangalore subramanyamcs@gmail.com
9.	Prof. K.P. Alakananda	Lecturer, National College, Basavanagudi
10.	Prof. B.G. Jagadeesha	Lecturer, National College, Basavanagudi
11.	Prof. Vijaya Raghavan H.G	Lecturer, National College, Basavanagudi
12.	Prof. Divyashree. N	Lecturer, National College, Basavanagudi
13.	Prof. Bharath V	Lecturer, National College, Basavanagudi
14.	Prof. Sangeetha B.K	Lecturer, National College, Basavanagudi
15.	Prof. Satish Kumar G	Lecturer, National College, Basavanagudi
16.	Prof. Rashmi M	Lecturer, National College, Basavanagudi

## **Proceedings of the meeting**

Prof. Ravi Hegde welcome the gathering for the 7th BOS meeting and requested to give suggestions and guidelines towards the proposed detailed syllabus. He briefed credits for the previous semesters structure.

Smt. Alakananda K.P. read the proceedings of the previous meeting held on 14-09-2015 and the BOS members confirmed the proceedings.

Dr. Jayant Harista suggested Complementary skills as title instead of Complementary skills for software Professionals as a Soft core. To develop Systems Thinking and Critical Thinking and to handle Conflict Management and Negotiation Skills is necessary theme of the course he added.

Dr. Dinesh since communication skills are lacking the professionals so skill requirement is required, he also said mapping to software and its terminology is essential. The development of Interview Skills should be seen.

Dr. Jayant Harista felt 4<sup>th</sup> semester syllabus of Complementary skills and technical training are required.

Prof. P.G Bhat suggested that the technical skills are less useful when compared to life skills. He also said Teaching, mentoring, and knowledge sharing play a significant role.

Student Representative Mr. Subramanya says mock interview should be given highest priority for placement, he also stressed upon the test cases and tools being very important in the industry.

Mr. Shankar, expressed the syllabus being extremely good and greater objective. He discussed with the team to cut down the credits and also talked about the testing importance for M.Sc students. Dr. Dinesh also supported his line of thinking.

Mr. Shashidhar, suggested to include seminars in soft core. Technical writing Documentation Patterns should be stressed upon.

Dr. Deepa Shenoy says a 6hrs practical lab can be made as 3hrs lab and 3hrs of mini project.

Mr. Shankar suggested to include testing development course in 2<sup>nd</sup> semester Or 3<sup>rd</sup> semester and also include mobile testing in it as an industry perspective. He also said testing should be supported with testing lab instead of 3<sup>rd</sup> and 4<sup>th</sup> semester syllabus of soft core. He insisted that the student should have knowledge about the curriculum having syllabi of three streams:

- a. Applications and Testing
- b. Data Analytics
- c. Big data

Dr. Jayant Harista stressed Operating system and Data Structure are the necessary in the syllabus as the students are of variable quality. Applying design principles and concepts to algorithm design and developing mathematical foundation in analysis of algorithms should be concentrated.



Mr. Subramanya suggested to remove Software Architecture and Data structure as it gains least scope in Industry. Dr. Deepa Shenoy also suggested the same and panel agreed.

Dr. Dinesh and Mr. Shankar suggested to change Software Architecture to Software Testing with hands on lab. The change was accepted.

Dr. Jayant Harista felt the duplication of the syllabus of Data Mining, Applied Data Analytics and Big Data Analytics and hence suggested to combine Applied Data Analytics and Big Data Analytics with title as Big data Analytics.

Dr. Deepa Shenoy, suggested Communication skill lab is necessary for Soft skill development. Development of Communicative Skills , Technical writing ,Stress Management, Life Style and Health should be brought about.

Dr. Dinesh says , he also mentioned that Soft skills should help in Teaching Assistance for High School students for which they can earn as credits.

Mr. Shankar said brainstorming skill is essential to write Statement of Work(SOW).

The following are the conclusions:

- a. C6: Software Architecture changed to Software Testing
- b. Soft Skills credits reduced to 6 from 8 credits
- c. Merge C11:Applied Data Analytics with C15:Big Data Analytics call it C11:Big Data Analytics

The proposed and approved patterns of the courses and are enclosed in *Annexure 1*

The list of the Members of the BOE was approved by the Board, enclosed in *Annexure 2*.



Ravi Hegde  
Chairperson  
Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
Basavangudi, Bangalore-560004

**Annexure 1**  
**Postgraduate Course in Computer Science**  
**Course Structure**

Subjects	Papers	Credits
Hard Core Theory	16	64
Soft Core Theory	4	8
Practical	7	28
Project work	1	16
Open Elective	1	2
<b>Total</b>	<b>29</b>	<b>120</b>

I Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA Tot	Exam		
C1	Object Oriented Analysis and Design with UML	4	30	70	100	4
C2	Design and Analysis of Algorithms	4	30	70	100	4
C3	Database Management Systems	4	30	70	100	4
C4	Enterprise Software Development	4	30	70	100	4
C5	Statistics for Software Development	4	30	70	100	4
L1	ADA Lab	4	30	70	100	4
L2	DBMS Lab	4	30	70	100	4
S1	Communication and Team work	2	15	35	50	2
<b>Total Credit</b>					750	30

II Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C6	Design patterns and Software Architecture	4	30	70	100	4
C7	Data Mining	4	30	70	100	4
C8	Software Development with J2EE	4	30	70	100	4
C9	Operating Systems and Network Programming	4	30	70	100	4
C10	Elective 1 (one of the following)	4	30	70	100	4
	Cryptography and Security					
	Artificial Intelligence					
	Advanced Computer Networks					
L3	J2EE + Data mining Lab	4	30	70	100	4
L4	Network Programming Lab	4	30	70	100	4
S2	Documentation	2	15	35	50	2

**The National College, Autonomous, Basavanagudi, Bengaluru-04**

Total Credit				750	30
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III Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C11	Advanced Software Engineering	4	30	70	100	4
C12	Applied Data Analytics	4	30	70	100	4
C13	Web Application Development with Android	4	30	70	100	4
C14	Elective 2 (one of the following)	4	30	70	100	4
	Machine Learning					
	Embedded Systems					
	User Interface Design					
C15	Elective 3 (one of the following)	4	30	70	100	4
	High Performance Computing and Cloud Computing					
	Compiler Design					
	Performance Modeling					
	Social Networks					
L5	Android + User Interface Lab	4	30	70	100	4
L6	High Performance Computing Lab	4	30	70	100	4
S3	Presentation	2	15	35	50	2
OE	Open Elective	2	15	35	50	2
Total Credit					800	32

IV Semester						
Course	Title of the Paper	Hours /Week	Marks			Credits
			IA	Exam	Tot	
C16	Big Data Analytics	4	30	70	100	4
L7	Big data Practical	4	30	70	100	4
P1	Project work	16	120	280	400	16
S4	Personality Development	2	15	35	50	2
Total Credit					650	26

**Annexure 2**

**The following list of the Board of Examiners was approved by the Board:**

Sl.No	Members Name	Address
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National Degree College Basavanagudi, Bangalore
2.	Dr. K.V Dinesha Member	Professor, Institute of Information Technology, Bangalore.
3.	Prof. P.G. Bhat Member	Visiting Professor, National College, Jayanagar

**The National College, Autonomous, Basavanagudi, Bengaluru-04**

4.	Prof.Vasanth S External Member	Professor,Sir M Visvesvaraya Institute of Technology,Bangalore.
5.	Smt. Alakananda.K.P Member	Lecturer, National College Basavanagudi
6.	Sri. Jagadeesh B.G Member	Lecturer, National College Basavanagudi
7.	Prof.Vijayaraghavan Member	Lecturer, National College Basavanagudi
8.	Prof.Sangeetha B.K Member	Lecturer, National College Basavanagudi
9.	Prof.Satish Kumar G Member	Lecturer, National College Basavanagudi
10.	Prof.Divyashree N Member	Lecturer, National College Basavanagudi
11.	Prof.Rashmi M Member	Lecturer, National College Basavanagudi

**The following list of the External Examiners was approved by the Board:**

Sl.No	Members Name	Address
1.	Dr.. Gundu Rao	Assoc. Professor Vijaya College Basavanagudi,Bangalore
2.	Dr. Anil Kumar	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce ,Shavige Malleshwara Hills, Kumaraswamy Layout,B-78.
3.	Dr. Manjunath Rao	Assoc. Professor, Dept. of MCA , Ambedkar college of Engineering
4.	Dr. Gurunath R	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce ,Shavige Malleshwara Hills, Kumaraswamy Layout,B-78.
5.	Prof. Raghavaendra H G	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
6.	Prof. Vasanth S	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
7.	Prof. Manikanta K	Asst. Prof. Al-Amen College of Information Science, K.H.Road,Bangalore
8.	Prof. Sunil R.D.	The Oxford College , Bangalore
9.	Prof. Mamatha B G	Acharya Institute of Technology, Bangalore
10.	Prof. A.G Vishwanatha	BIT College , VV Puram



Ravi Hegde  
Chairperson

Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
Basavangudi, Bangalore-560004



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## DEPARTMENT OF COMPUTER SCIENCE

# BOS

*Proceedings*

**14<sup>th</sup> September 2015**

## Meeting Notice

28-08-2015

To  
BOS Member

Dear Sir/madam,

Subject: Meeting of the Board of Studies in Computer Science(PG)

We are pleased to inform you that the Meeting of the Board of Studies in Computer Science(PG) is being arranged for Monday, the 14th September 2015 at 11.30 a.m. in the department of Computer Science , The National College Autonomous, Basavanagudi, Bangalore – 560 004, to review and update the existing III & IV semesters M.Sc Computer Science syllabi. In this regard your expertise and advice is most essential.

We request you to kindly make it convenient to attend the meeting.

Meeting Agenda:

1. Proceeding of previous BOS meeting held on 25-08-2014.
2. Review of all four semesters course structure in Choice-Based Credit system pattern.
3. Review of the Syllabus of the Courses existing III and IV Semesters.
4. Discussion of Open Elective Papers as designed by the Department in the Choice-based Credit system.
5. Approval of Panel of External Examiners and Board of Examiners.
6. Any other subject.

Thanking you,

Yours sincerely,



Chairperson  
Ravi Hegde



THE NATIONAL DEGREE COLLEGE BASAVANAGUDI, BANGALORE-4  
AUTONOMOUS

## Department of Computer Science

### Board of Studies in Computer Science(PG)

The meeting of the Board of Studies(PG) in Computer Science was held on September 14<sup>th</sup> 2015, Monday at 10.30 a.m. in the department.

Sl.No	Members Name	Signature
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	
2.	Dr. Deepa Shenoy P University Nominee	P. Deepa Shenoy 10/9/15
3.	Dr. K.V Dinesha Subject Expert	K.V. Dinesha
4.	Dr. Y.Narahari Subject Expert	
5.	Sri. K.S.G.Shankar Industrial Representative	
6.	Prof. P.G. Bhat Subject Expert	
7.	Dr. M.S. Shashidhar Subject Expert	
8.	Sri. Keerthi Kumar N Alumnus of the college	
9.	Prof. K.P. Alakananda	Alakananda. K.P.
10.	Prof. B.G. Jagadeesha	
11.	Prof. Vijaya Raghavan H.G	
12.	Prof. Divyashree. N	
13.	Prof. Bharath V	
14.	Prof. Sangeetha B.K	
15.	Prof. Rashmi M	

**Proceedings of the BOS (PG) held on 14.09.2015( Monday)**

The Board of Studies (PG) meeting was held on 14<sup>th</sup> of September 2015(Monday)at 11am, at the Department of Computer Science, National Degree College (Autonomous), Basavangudi, Bangalore -560004

The following members were present during the meeting:

1. Prof. Ravi Hegde –Chairperson
2. Dr. Dinesh-Subject expert
3. Prof. P.G. Bhat – Subject expert
4. Sri. K.S.G.Shankar – Industrial Representative
5. Dr. Shashidhar- Subject expert
6. Dr. Deepa Shenoy- University nominee
7. Mr. Keerthi Kumar –Student representative
8. Smt. Alakananda.K.P -Member
9. Shri. Jagadeesha.B.G- Member
10. Shri .VijayaRaghavan H.G- Member
11. Smt. Divyashree.N- Member
12. Shri. Bharath.V – Member
13. Smt.Sangeetha B.K -Member
14. Shri. Satish Kumar G -Member
15. Miss.Rashmi.M -Member

The meeting commenced with welcome speech by Prof. Ravi Hegde, HOD, Computer Science. He presented the course structure and requested to give suggestions and guidelines towards the proposed detailed syllabus.

Smt. Alakananda K.P. read the proceedings of the previous meeting held on 25-08-2014 and the BOS members confirmed the proceedings.

The proposed pattern of the courses was accepted with a few modifications that focused on titles of Papers/Courses and number of papers/ Courses offered in a particular area.

1. In Semester III and IV, the numbers of Papers/Courses were accepted as in the proposed pattern.
2. In Semester III and IV, the Paper/ Course, the Board observed that C11-Data Mining should be considered as Hard Core and C12- should be a Soft Core which has electives,Wireless networks, Embedded Systems and User Interface design. C13 -Soft Core consists of High Performance Computing and Cloud Computing, Compiler design, simulation and Social Networks and Machine Learning as electives. Course C14- WEB Application Development with Android is considered as Hard Core as it is required for practical session.
3. Shri. K.S.G Shankar suggested Social Network and Machine Learning should be combined as one of the elective Course, C13.
4. The Syllabus of Advanced Computer Networks required minor changes which got to the notice of the board and the required changes were made by Prof. Ashok Herur by introducing IPV4 and IPV6 networks. Understand and building the skills of sub netting and routing mechanisms.



- Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation should be the objective of the course.
5. Testing methodologies and deploying on cloud are the recent trends which play an important role, so the students should be given knowledge of these components. Identify the realistic problem for different category of software. The members also suggested list of tools..
  6. The use of tool Python was suggested by a member of board which makes the use of Scripting language.
  7. Dr. Dinesh talked about the importance of Hackathons which has been evaluated by IBM And Google. He advised to encourage the students to attend these programmes.
  8. The course, “Advanced Database Management system” should include NoSql and reduce some Of the RDBMS concepts. Objective must be to study the physical and logical database designs, database modeling, relational, hierarchical, and network models and to understand and use data manipulation language to query, update, and manage a database.
  9. In Semester III, the Title: Open Elective: Sri K.S.G .Shankar and Dr. Dinesh suggested the title for Open Elective as Content management System using Word Press. Case studies should be included related to concepts and subjects.
  10. Prof. P.G. Bhat suggested to add Agile in the syllabus, remove waterfall Model ,Tools has to be implemented and Reference books related to topic has to be upgraded in software Engineering.

The proposed and approved patterns of the courses and are enclosed in *Annexure 1*

The list of the Members of the BOE was approved by the Board, enclosed in *Annexure 2*.

The Board accepted and approved the details of the individual courses, which will be offered to the students this academic year.



Ravi Hegde  
Chairperson

Board of Studies (PG) in Computer Science  
The National College , Autonomous,  
Basavangudi, Bangalore-560004

*Annexure 1***Postgraduate Course in Computer Science****Course Structure**

<b>Subjects</b>	<b>Papers</b>	<b>Credits</b>
Hard Core Theory	10	40
Soft Core Theory	4	16
Practical	5	20
Mini Project	1	04
Project work	1	16
	21	96

<b>I Semester</b>					
<b>Course</b>	<b>Title of the Paper</b>	<b>Hard / Soft Core</b>	<b>Lecture</b>	<b>Practical</b>	<b>Credit</b>
C1	Object Oriented Analysis and Design with UML	Hard Core	4	-	4
C2	Data Structures and Algorithms	Hard Core	4	-	4
C3	Advanced Database Management Systems	Hard Core	4	-	4
C4	Enterprise Software Development	<b>Soft Core</b>	4	-	4
L1	Data Structures and Algorithms Lab	Hard Core	-	4	4
L2	Internet Technologies Lab	Hard Core	-	4	4
<b>Total Credit</b>					<b>24</b>

II Semester					
Course	Title of the Paper	Hard / Soft Core	Lecture	Practical	Credit
C5	Design patterns and Software Architecture	Hard Core	4	-	4
C6	Design and Analysis of Algorithms	Hard Core	4	-	4
C7	Software Development with J2EE	Hard Core	4	-	4
C8	Operating Systems and Network Programming	Hard Core	4	-	4
C9	<b>Elective 1 (one of the following)</b>	Soft Core	4	-	4
	Cryptography and Security				
	Artificial Intelligence				
	Advanced Computer Networks				
L3	J2EE Lab	Hard Core	-	4	4
L4	Network Programming Lab	Hard Core	-	4	4
<b>Total Credit</b>					<b>28</b>

III Semester					
Course	Title of the Paper	Hard / Soft Core	Lecture	Practical	Credit
C10	Advanced Software Engineering	Hard Core	4	-	4
C11	Data Mining	Hard Core	4	-	4
C12	<b>Elective 2 (one of the following)</b>	Soft Core	4	-	4
	Wireless Networks				
	Embedded Systems				
	User Interface Design				
C13	<b>Elective 3 (one of the following)</b>	Soft Core	4	-	4
	High Performance Computing and Cloud Computing				
	Compiler Design				
	Simulation				

	Social Networks and Machine Learning				
C14	Web Application Development with Android	Hard Core	4	-	4
L5	Android Lab	Hard Core	-	4	4
P1	Mini Project	Hard Core	-	4	4
<b>Total Credit</b>					<b>28</b>

### IV Semester

Course	Title of the Paper	Hard / Soft Core	Lecture	Practical	Credit
P2	Project work	Hard Core	-	16	16
<b>Total Credit</b>					<b>16</b>

### Annexure 2.

The following list of the Board of Examiners was approved by the Board:

Sl.No	Members Name	Address
1.	Prof. Ravi Hegde Chairperson & HOD of Cs.	The National Degree College Basavanagudi, Bangalore
2.	Dr. K.V Dinesha Member	Professor, Institute of Information Technology, Bangalore.
3.	Prof. P.G. Bhat Member	Visiting Professor, National College, Jayanagar
4.	Prof. Muralidhar Koteswar Member	Visiting Professor, National College, Basavanagudi
5.	Prof. Manikanta K External member	Professor, Al-Amen College of Information Science, K.H. Road, Bangalore
6.	Prof. Vishwanath A G External Member	Asst. Prof Bangalore Institute of technology, VVPuram Bangalore
7.	Smt. Alakananda.K.P Member	Lecturer, National College Basavanagudi
8.	Sri. Jagadeesh B.G Member	Lecturer, National College Basavanagudi
9.	Prof. Vijayaraghavan Member	Lecturer, National College Basavanagudi
10.	Prof. Sangeetha B.K Member	Lecturer, National College Basavanagudi
11.	Prof. Satish Kumar G Member	Lecturer, National College Basavanagudi
12.	Prof. Kalyani P Member	Lecturer, National College Basavanagudi

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<b>13.</b>	Prof.Rashmi M Member	Lecturer, National College Basavanagudi
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The following list of the External Examiners was approved by the Board:

<b>Sl.No</b>	<b>Members Name</b>	<b>Address</b>
1.	Dr.. Gundu Rao	Assoc. Professor Vijaya College Basavanagudi,Bangalore
2.	Dr. Anil Kumar	Asst. Professor, Dept. of Computer Science, Dayananda Sagar College of Art Science & Commerce ,Shavige Malleshwara Hills, Kumaraswamy Layout,B- 78.
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5.	Prof. Raghavaendra H G	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
6.	Prof. Vasanth S	Asst. Prof. Sir M Visvesvaraya Institute of Technology,Bangalore.
7.	Prof. Manikanta K	Asst. Prof. Al-Amen College of Information Science, K.H.Road,Bangalore
8.	Prof. Sunil R.D.	The Oxford College , Bangalore
9.	Prof. Mamatha B G	Acharya Institute of Technology, Bangalore
10.	Prof. A.G Vishwanatha	BIT College , VV Puram



Ravi Hegde  
Chairperson

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