# School of Computing and Information Technology

## Department of Computer and Communication Engineering

Date: April 16,2019

## Note Sheet

Board of Studies (BoS) meeting of the department is scheduled to be held on April 18th 2019 from 2:00 PM to 4:00 PM. Following external experts from academia and industry are part of BoS.

1. Dr. Ravi Gorthi, Professor, LNMIIT

2. Mr. Mukesh Kumar Sharma, Project Manager, Metacube Jaipur

An honorarium of Rs. 2000 for each expert is proposed along with the local conveyance as per MUJ norms.

Submitted for your kind approval please.

Head-CCE *Vijay* 16/04/19

Director, SCIT *Behulawat* 16. Apr. 19

Dean, FoE Approved 16.0.19

# MANIPAL UNIVERSITY JAIPUR

## School of Computing and Information Technology

## Department of Computer and Communication Engineering

## Minutes of Meeting

Date: April 18, 2019

**Subject:** Department BoS meeting for finalizing program structure and Course Content for B.Tech. in Computer and Communication Engineering.

The following points have been discussed and decided in the meeting:

1) Introduction to DevOps should be added to the syllabus of Software Engineering Lab. Book on DevOps should also be added in its references.
2) FOG Computing should be added to the syllabus of Cloud Computing.
3) The syllabus of Information Theory and Coding should be revised to make it advanced as per current requirements.
4) The students who choose Network Security as an Elective subject should complete online certification courses in the same area.
5) The subject Spatial Data Analytics should include 3DGS and 4DGS after discussion with Prof. Rajveer Singh Shekhawat, the subject expert.
6) Designing Test Cases, Coding Standards and Demo should be added to the syllabus of software Engineering Lab. These topics should give 20% weightage in the subject.
7) In the subject Design and Analysis of Algorithms, reference 2 should be changed.
8) In the subject, IoT, case studies for applications should be added rather than domain specific applications.
9) Reference books should be changed to latest editions in the subject, Web Programming. CSS4 or CSS5 to be added after discussion with experts.
10) The syllabus of DevOps should be reduced.
11) The syllabus of Deep Learning should be elaborated.
12) Reference books should be changed to latest editions in Soft Computing. Latest optimization techniques can be added to the syllabus of soft computing, after discussion with experts.
13) In Automata Theory and Compiler Design, 60% part should be from Automata and 40% part from the Compiler Design.
14) In AI and ML Lab, Experiments based on semantic logic should be added and decision trees should be reconsidered for deletion from the lab syllabus.
15) The hyphens should be removed from the syllabus of Human Computer Interaction. Re-formatting is required.
16) Reference books should be changed to latest editions in Mobile Computing.
17) In RDBMS Lab, Oracle and MYSQL both should be included for performing experiments.
18) Software Testing should be added to the syllabus of software Engineering.
19) References should be updated to the latest reprints available in Principles of Web Services and Digital Image Processing.
20) References should be updated to the latest reprints available in User Interface Design and advanced topics should also be included in the syllabus.
21) In Computer Graphics and Multimedia, the scope for adding the topics on visualization should be explored and discussed with experts.
22) Foundation of Big Data Analytics should be based on Data Science. The scope for adding scaling of storage techniques and algorithms should be explored and added after discussion with experts.

23) The references should be rechecked for each subject to ensure the latest editions or reprints if no new edition is available.
24) Formatting should be rechecked for each subject.

BoS has approved the proposed Program Structure and Syllabus for B.Tech in Computer and Communication Engineering with minor changes.

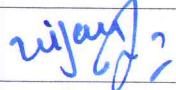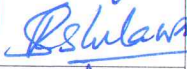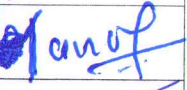The meeting ended with a vote of thanks to External expert Prof. Ravi Gorthi.
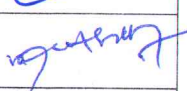
## Attendance Sheet, BoS

Date: April 18, 2019

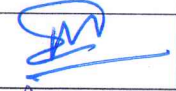| S. No. | Name | Designation in BoS | Signature |
|---|---|---|---|
| 1 | Prof. Vijaypal Singh Dhaka, Professor, CCE, SCIT | Chairman | Present |
| 2 | Prof. Rajveer S. Shekhawat, Professor, Director, SCIT | Member | Present |
| 3 | Dr. Arjun Singh, Associate Professor, CCE, SCIT | Member | Present |
| 4 | Dr. Manoj K. Bohra, Associate Professor, CCE, SCIT | Member | Present |
| 5 | Dr. Gulrej Ahmed, Associate Professor, CCE, SCIT | Member | Present |
| 6 | Dr. Himanshu Chodhary, Associate Professor, ECE, MUJ | Member outside the department | Present |
| 7 | Prof. Ravi Prakash Gorthi, Professor, CSE, LNMIIT, Jaipur | External Member | Present |
| 8 | Prof. H Ravishankar Kamath, Registrar, MUJ | Ex-officio Member | Absent |
| 9 | Dr. Anshuman Kalla, Associate Professor, CCE, SCIT | Invited Member | Present |
| 10 | Dr. Suhil Kumar, Associate Professor, CCE, SCIT | Invited Member | Absent |
| 11 | Dr. Amita Nandal, Associate Professor, CCE, SCIT | Invited Member | Present |
| 12 | Dr. Manoj K Sharma, Associate Professor, CCE, SCIT | Invited Member | Present |
| 13 | Dr. Punit Gupta, Associate Professor, CCE, SCIT | Invited Member | Present |
| 14 | Dr. Geeta Rani, Assistant Professor, CCE, SCIT | Invited Member | Present |
| 15 | Dr. Muthukumaran, Assistant Professor, CCE, SCIT | Invited Member | Present |

# Attendance Sheet, BOS

Date: April 18, 2019

| S. No. | Name | Designation in BoS | Signature |
|---|---|---|---|
| 1 | Prof. Vijaypal Singh Dhaka, Professor, CCE, SCIT | Chairman | *(signed)* |
| 2 | Prof. Rajveer S. Shekhawat, Professor, Director, SCIT | Member | *(signed)* |
| 3 | Dr. Arjun Singh, Associate Professor, CCE, SCIT | Member | *(signed)* |
| 4 | Dr. Manoj K. Bohra, Associate Professor, CCE, SCIT | Member | *(signed)* |
| 5 | Dr. Gulrej Ahmed, Associate Professor, CCE, SCIT | Member | *(signed)* |
| 6 | Dr. Himanshu Chodhary, Associate Professor, ECE, MUJ | Member outside the department | *(signed)* |
| 7 | Prof. Ravi Prakash Gorthi, Professor, CSE, LNMIIT, Jaipur | External Member | *(signed)* |
| 8 | Prof. H Ravishankar Kamath, Registrar, MUJ | Ex-officio Member | — Absent — |
| 9 | Dr. Anshuman Kalla, Associate Professor, CCE, SCIT | Invited Member | *(signed)* |
| 10 | Dr. Sunil Kumar, Associate Professor, CCE, SCIT | Invited Member | — Absent — |
| 11 | Dr. Amita Nandal, Associate Professor, CCE, SCIT | Invited Member | *(signed)* |
| 12 | Dr. Manoj K Sharma, Associate Professor, CCE, SCIT | Invited Member | *(signed)* |
| 13 | Dr. Punit Gupta, Associate Professor, CCE, SCIT | Invited Member | *(signed)* |
| 14 | Dr. Geeta Rani, Assistant Professor, CCE, SCIT | Invited Member | *(signed)* |
| 15 | Dr. Muthukumaran, Assistant Professor, CCE, SCIT | Invited Member | *(signed)* |
| 16 | | | |
| | | | |
| | | | |

## THIRD SEMESTER

| Course Code | Course Name | L | T | P | C |
|---|---|---|---|---|---|
| EO2001 | Economics | 3 | 0 | 0 | 3 |
| MA2101 | Engineering Mathematics III | 2 | 1 | 0 | 3 |
| CC2101 | Digital Design and Computer Architecture | 3 | 1 | 0 | 4 |
| CC2102 | Data Communications | 3 | 1 | 0 | 4 |
| CC2103 | Data Structures and Algorithms | 3 | 1 | 0 | 4 |
| CC2104 | Object Oriented Programming | 3 | 1 | 0 | 4 |
| CC2130 | Data Communications Lab | 0 | 0 | 2 | 1 |
| CC2131 | Data Structures and Algorithms Lab | 0 | 0 | 2 | 1 |
| CC2132 | Object Oriented Programming Lab | 0 | 0 | 2 | 1 |
| | | 17 | 5 | 6 | 25 |
| | Total Contact Hours (L + T + P) | 17+5+6=28 | | | |

## FOURTH SEMESTER

| Course Code | Course Name | L | T | P | C |
|---|---|---|---|---|---|
| BB0025 | Value, Ethics and Governance | 2 | 0 | 0 | 2 |
| MA2201 | Engineering Mathematics IV | 2 | 1 | 0 | 3 |
| CC2201 | Computer Networks | 3 | 1 | 0 | 4 |
| CC2202 | Relational Database Management Systems | 3 | 1 | 0 | 4 |
| CC2203 | Operating Systems | 3 | 1 | 0 | 4 |
| ****** | Open Elective – I | 3 | 0 | 0 | 3 |
| CC2230 | Computer Networks Lab | 0 | 0 | 2 | 1 |
| CC2231 | Relational Database Management Systems Lab | 0 | 0 | 2 | 1 |
| CC2232 | Operating Systems Lab | 0 | 0 | 2 | 1 |
| | | 16 | 4 | 6 | 23 |
| | Total Contact Hours (L + T + P) | 16 +4+6 = 26 | | | |

## FIFTH SEMESTER

| Course Code | Course Name | L | T | P | C |
|---|---|---|---|---|---|
| CC3101 | Software Engineering | 3 | 1 | 0 | 4 |
| CC3102 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| CC3103 | Foundations of Data Science | 3 | 1 | 0 | 4 |
| CC3104 | Cryptography and Security | 3 | 1 | 0 | 4 |
| CC31XX | Program Elective – I | 3 | 0 | 0 | 3 |
| ****** | Open Elective – II | 3 | 0 | 0 | 3 |
| CC3130 | Software Engineering Lab | 0 | 0 | 2 | 1 |
| CC3131 | Design and Analysis of Algorithms Lab | 0 | 0 | 2 | 1 |
| | | 18 | 4 | 4 | 24 |
| | Total Contact Hours (L + T + P) | 18+4+4 = 26 | | | |

## SIXTH SEMESTER

| Course Code | Course Name | L | T | P | C |
|---|---|---|---|---|---|
| BB0026 | Organization and Management | 3 | 0 | 0 | 3 |
| CC3201 | Artificial Intelligence and Machine Learning | 3 | 1 | 0 | 4 |
| CC3202 | Wireless Communications | 3 | 1 | 0 | 4 |
| CC3203 | Automata Theory and Compiler Design | 3 | 0 | 0 | 3 |
| CC32XX | Program Elective – II | 3 | 0 | 0 | 3 |
| ****** | Open Elective – III | 3 | 0 | 0 | 3 |
| CC3230 | Artificial Intelligence and Machine Learning Lab | 0 | 0 | 2 | 1 |
| CC3231 | LINUX Shell Programming Lab | 0 | 0 | 2 | 1 |
| CC3270 | Minor Project | 0 | 0 | 6 | 3 |
| | | 18 | 2 | 10 | 25 |
| | Total Contact Hours (L + T + P) | 18+ 2+10 = 30 | | | |

## SEVENTH SEMESTER

| Course Code | Course Name | L | T | P | C |
|---|---|---|---|---|---|
| CC41XX | Program Elective – III | 3 | 0 | 0 | 3 |
| CC41XX | Program Elective – IV | 3 | 0 | 0 | 3 |
| CC41XX | Program Elective – V | 3 | 0 | 0 | 3 |
| CC41XX | Program Elective – VI | 3 | 0 | 0 | 3 |
| CC41XX | Program Elective – VII | 3 | 0 | 0 | 3 |
| CC4170 | Industrial Training | 0 | 0 | 2 | 1 |
| | | 15 | 0 | 2 | 16 |
| | Total Contact Hours (L + T + P) | 15+0+2=17 | | | |

## EIGHTH SEMESTER

| Course Code | Course Name | L | T | P | C |
|---|---|---|---|---|---|
| CC4270 | Major Project | | | | 12 |
| | | | | | 12 |

HoD, CCE
MANIPAL UNIVERSITY
JAIPUR-303007

| Programme Electives (Minor Specializations) | Other Programme Electives | Open Electives (OE-I, OE-II, OE-III) |
|---|---|---|
| **(PE-I, PE-II, PE-III, PE-IV)** | **(PE V, PE VI, PE VII)** | |
| **Web Technologies**<br><br>CC3140: Web Programming<br>CC3240: Advanced Internet Technologies<br>CC4140: Principles of Web Services<br>CC4141: DevOps Fundamentals<br><br>**Computational Intelligence**<br><br>CC3141: Soft Computing<br>CC3241: Computer Vision<br>CC4142: Natural Language Processing<br>CC4143: Deep Learning<br><br>**Sensors Networks and IoT**<br><br>CC3142: Digital Communication & Signal Processing<br>CC3242: Next Generation Telecom Networks<br>CC4144: Internet of Things (IoT)<br>CC4145: Software Defined Networks | CC4146  Embedded Systems<br>CC4147  Networks on Chip<br>CC4148  Wireless Sensors & Adhoc Networks<br>CC4149  Human Computer Interaction<br>CC4150  Mobile Computing<br>CC4151  Information Retrieval<br>CC4152  Computer Graphics & Multimedia<br>CC4153  User Interface Design<br>CC4154  Digital Image Processing<br>CC4155  Big Data Analytics<br>CC4156  Data Mining and Data Warehousing<br>CC4157  Social Network Analysis<br>CC4158  Software Testing<br>CC4159  Cloud Computing<br>CC4160  Information Theory and Coding<br>CC4161  Network Security<br>CC4162  Spatial Data Analytics | CC2080: Introduction to Data Structures and Algorithms<br>CC3080: Introduction to Object Oriented Programming<br>CC3081: Introduction to Web Technology<br>CC3082: Introduction to IoT |