

## Mobile Computing



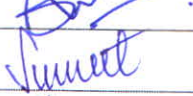
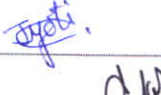


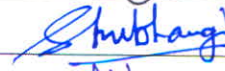

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|--------------|-----------------------|--------------|
| Semester III | Subject Code: MS31902 | Lectures: 60 |
|--------------|-----------------------|--------------|

### Objectives:

The syllabus aims in equipping students with,

- familiarity of buzz words and technology of mobile communication
- understanding of GSM architecture
- understanding the issues relating to Wireless applications
- new technology Android operating system and programming

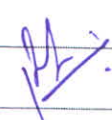

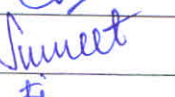
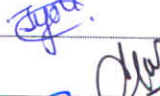
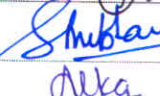
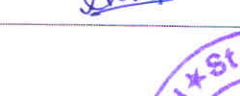


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| <b>Unit 1: Android Operating System</b>   | 22 |
| <b>Chapter 1 : Introduction to Android Operating System</b> <ul style="list-style-type: none"> <li>• Overview and evolution of Android</li> <li>• Features of Android</li> <li>• Android architecture</li> <li>• Components of an Android Application, Manifest file</li> </ul>                             | 10 |
| <b>Chapter 2 : Android Programming</b> <ul style="list-style-type: none"> <li>• Android Activity and Service Lifecycle</li> <li>• UI Designing (layout designing)</li> <li>• All components (e.g Button , Slider, Image view, Toast etc.)</li> <li>• Event Handling</li> <li>• Database Handling</li> </ul> | 12 |

| Sr. No. | BOS member             |                  | Sign  |
|---------|------------------------|------------------|---|
| 1       | Dr. Razak Sayyed       | Subject Expert   |  |
| 2       | Prof. Abhijit Sathe    | Subject Expert   |  |
| 3       | Prof. Sonali Deshmukh  | Subject Expert   |  |
| 4       | Mr. Sumeet Kakroo      | Industry Expert  |  |
| 5       | Ms. Jyoti Sharma       | Alumni           |  |
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| <b>Unit 2: Mobile computing</b>   | <b>7</b> |
| <b>Chapter 3 : Introduction to Mobile Computing</b> <ul style="list-style-type: none"> <li>• Introduction and need for Mobile computing</li> <li>• Mobility and portability</li> <li>• Mobile and Wireless devices</li> <li>• Cellular Systems in wireless transmission</li> </ul>                                  | <b>3</b> |
| <b>Chapter 4 : Medium Access Control Layer</b> <ul style="list-style-type: none"> <li>• Why specialized MAC? <ul style="list-style-type: none"> <li>a. hidden and exposed terminals</li> <li>b. near and far terminals</li> </ul> </li> <li>• General Concepts and comparison of SDMA, FDMA, TDMA , CDMA</li> </ul> | <b>4</b> |

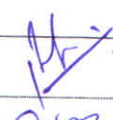

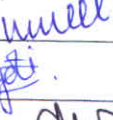
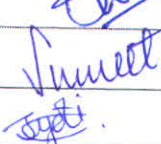

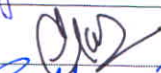
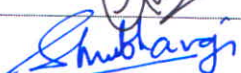
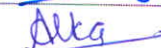
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| <b>Unit 3: Mobile computing protocols</b>   | <b>13</b> |
| <b>Chapter 5 : Mobile IP</b> <ul style="list-style-type: none"> <li>• Goals, assumptions and requirements</li> <li>• Entities and terminologies</li> <li>• Agent Discovery</li> <li>• Registration</li> <li>• Tunneling and encapsulation</li> <li>• Optimization</li> <li>• Reverse Tunneling</li> <li>• IPv6</li> <li>• IP micro-mobility support – Cellular IP, Hawaii, Hierarchical, mobile IPv6</li> <li>• Mobile Routing : <ul style="list-style-type: none"> <li>- Destination sequence distance Vector, Dynamic Source Routing,</li> <li>- Alternative Metrics, Adhoc Routing Protocols -Flat, Hierarchical,</li> <li>- Geographic-position-assisted</li> </ul> </li> </ul> | <b>8</b>  |

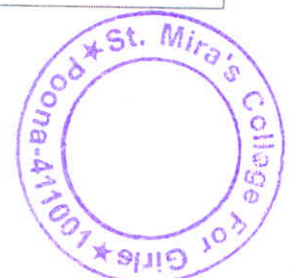
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| <b>Chapter 6 : Mobile TCP</b> <ul style="list-style-type: none"> <li>• Traditional TCP <ul style="list-style-type: none"> <li>- Congestion Control, Slow start, Fast retransmit / Fast recovery</li> <li>o Implications on mobility</li> </ul> </li> <li>• Classical TCP improvements <ul style="list-style-type: none"> <li>Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit / Fast recovery, Transmission / Timeout freezing, Selective Retransmission, Transaction oriented TCP</li> </ul> </li> <li>• TCP over 2.5/3G wireless networks</li> </ul> | 5 |
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| <b>Unit 4: Mobile Services</b>   | 8 |
| <b>Chapter 7 : GSM</b> <ul style="list-style-type: none"> <li>• Mobile Services (Bearer, Tele-and-supplementary services)</li> <li>• System Architecture <ul style="list-style-type: none"> <li>- Radio subsystem</li> <li>- Network and switching subsystem</li> <li>- Operation subsystem</li> </ul> </li> <li>• Protocols</li> <li>• Localization and calling</li> <li>• Handover</li> <li>• GPRS</li> <li>• 3G mobile networks <ul style="list-style-type: none"> <li>- UMTS</li> <li>- UTRAN</li> </ul> </li> </ul> | 6 |
| <b>Chapter 8 : Wireless Application Protocol Architecture</b>  | 2 |




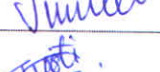

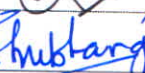


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\*Contact hours=10

**Reference Books:**

1. Jochen Schiller, *Mobile Communications*, Pearson Education, 2nd Edition, ISBN : 9780321123817
2. Wei-Meng Lee, *Beginning Android Application Development*, Wiley-India ISBN:9788126531066
3. Nishit Narang, Sumit Kasera, *Mobile Networks GSM and HSCSD*, TataMcGrawHill
4. Asoke K. Talukder, *Mobile Computing: Technology, Applications, and Service Creation*
5. Mark Murphy, *Beginning Android 3*, APress, ISBN 9788132203568
6. The Android Developers Guide [<http://developer.android.com/guide/index.html>]

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