

Course Outline Cover Page

Cellular Phone Servicing
Course Title

VTE 281
Department and Number

Course Description:

This subject deals with the principles of operation and servicing of cellular phones. It includes the manufacturer's procedure in servicing, systematic procedure in diagnosing faults, repairing of cellular phones, reassembling and testing repaired cellular phones according to industry standards.

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State: Pohnpei Campus

	Hours per Week	No. Of Weeks	Total Hours	Semester Credits
Lecture	3	16	48	3
Laboratory				
Total Semester Credits:				3

Purpose of Course:

Degree Requirement _____
Degree Elective _____ X _____
Advanced Certificate _____
Certificate _____
Remedial _____
Other (Workshop) _____

Prerequisite Course(s): VEE135

Signature, Chairman, Curriculum Committee

Date Approved by Committee

Signature, President, COM-FSM

Date Approved by the President

I. Course Learning Outcomes

A. General Objective: This course is designed to provide an opportunity to apply the principles of operation and servicing of cellular phone units. It also includes determining hardware and software defects, analysis and troubleshooting. Software installation and application of cellular phone programs and tricks will be discussed.

B. Specific Objectives: Upon successful completion of this course students will be able to know the following:

1. Principles of operation (DCT3, DCT4 and BB5 model of Nokia)
2. Parts and functions (DCT3, DCT4 and BB5 model of Nokia)
3. Peripherals and attachments (DCT3, DCT4 and BB5 model of Nokia)
4. Symptoms, diagnosis and repair (DCT3, DCT4 and BB5 model of Nokia)
5. Troubleshooting hardware and software problems (DCT3, DCT4 and BB5 model of Nokia)
6. Assembly and disassembly (DCT3, DCT4 and BB5 model of Nokia)

II. Outline of Course Content

1. *Principles of operation*

- a. Mobile phone basics
- b. Analog vs. digital
- c. Messages and Radio Signals
- d. Cellular signals
- e. Coding standards for cell phones

2. *Parts and function*

- a. Chassis
- b. Microphone
- c. Speaker
- d. LCD
- e. Keypad
- f. Key mat
- g. Antenna
- h. Bluetooth
- i. Infra red
- j. Vibra motor

3. *Peripherals and attachments*

- a. Headphones
- b. Power chargers

- c. Camera
- d. Communication cables
- e. Battery
- f. Dangles

4. *Symptoms diagnosis and repair*

- a. No signal
- b. No power
- c. No display
- d. No tone
- e. Water damage
- f. Hang-up
- g. LCD replacement
- h. Open line
- i. Flashing
- j. Contact Service
- k. Keypad problem
- l. Virus problem
- m. Application upgrades
- n. Insert SIM
- o. Memory Problem
- p. Auto shut-off

5. *Troubleshooting hardware and software problem*

- a. BGA IC replacement
- b. Backlight replacement
- c. Speaker
- d. Microphone
- e. LCD replacement
- f. Keypad replacement
- g. Flashing
- h. Unlocking
- i. Upload / Downloading of data

6. *Assembly and disassembly*

- a. Cover
- b. Chip board
- c. Chassis clips and lock
- d. Snap on
- e. Cell phone screws

STUDENTS WILL BE MADE AWARE OF OCCUPATIONAL HEALTH AND SAFETY ISSUES IN ALL SITUATIONS AND BE EXPECTED TO DEMONSTRATE SAFE WORKING PRACTICES AT ALL TIMES.

III. Textbook

- ❖ Mobile Usability. By Christian Lindholm, Turkka Keinonen and Harri Kiljander. ISBN: 0071385142, August 2003.

IV. Required Course Materials

Instructor:

- a. CAI Classroom with whiteboard or chalkboard
- b. Laboratory equipment with tools of the trade
 - b.1 Tools
 - T- series screw driver
 - set of twissers
 - 20 watts soldering iron
 - BGA plates, paste and balls
 - solder wick
 - soldering lead
 - bluetooth device
 - infrared device
 - DCT3 octopus cables
 - b.2 Equipment
 - JAF flasher box
 - Power Flasher box
 - hot air soldering station (Sunkko HS-850A)
 - Nokia Phone DCT3 (3310, 3315 series)
 - Nokia Phone DCT4(6610)
 - Nokia BB5 (6600, 6630)
 - b.3 Materials (DCT3,DCT4 and BB5 phones)
 - back lights LED
 - LCD -Key Mats
 - Key Pad
 - conductive rubber
 - battery connector
 - internal adaptor
 - sim card socket
 - power on/off switch

- speaker
- vibra motor
- microphone

- c. Text, Teacher's Resource Guide, workbook
- d. Overhead projector, transparencies

Student:

- a. Text(s), handouts provided by instructor
- b. Ring binder
- c. College ruled note sheet, pencil or pen
- d. Scientific calculator
- e. Tool box and complete set of tool kits

V. Reference Materials

- ❖ Nokia Service Manual Vol. 1 (www.huahongnet.com)
- ❖ Mobile Phone Service Manual Vol. 2 (www.huahongnet.com)
- ❖ Mobile Phone Repair Vol. 3(www.huahongnet.com)

VI. Instructional Cost

Refer to attached list of materials and equipment.

VII. Methods of Instruction

1. Computer Aided Instruction
2. Practical/Experimentation
3. Lecture/Demonstration
4. Troubleshooting of cellphone units

VIII. Evaluation

Final Grade for this course will be based on meeting the course requirements at the following percentage rates as established by the College:

90% - 100%	A – Superior
80% - 89%	B – Above Average
70% - 79%	C – Average
60% - 69%	D – Below Average
0 % - 59%	F – Failure

Credit-by-examination is not available for this course.

IX. Attendance Policy

The COM-FSM attendance policy will apply.

X. Academic Honesty

The COM-FSM academic honesty policy will apply.

XI. Assessment Criteria

Learning Outcome 1: Principles of operation of cellular phone

- Assessment Criteria:
- a. explain mobile phone basics
 - b. differentiate analog and digital
 - c. identify messages and radio signals
 - d. identify cellular signals
 - e. enumerate coding standards for cell phones

Assessment Methods: Multiple Choice Questions
Short answer Questions
Observation
Performance test

Learning Outcome 2: Parts and function

- Assessment Criteria:
- a. disassemble Nokia chassis (DCT3, DCT4 and BB5 series) using service manual
 - b. remove and test microphone based on service manual
 - c. detach and test speaker based on service manual
 - d. pull-out and check LCD based on service manual
 - e. remove and check keypad based on service manual
 - f. remove and check key mat based on service manual
 - g. remove and check antenna based on service manual
 - h. detach and test Bluetooth device by following the service manual procedure
 - i. inspect and test Infrared device by following the service manual procedure
 - j. pull-out and check vibra motor by following the service manual procedure

Assessment Methods: Multiple Choice Questions
Short answer Questions
Observation
Performance test

Learning Outcome 3: Peripherals and attachment

- Assessment Criteria:
- a. remove and test earphones by following the service manual procedure
 - b. disassemble and test power charger by following the service manual procedure
 - c. remove and test camera by following the service manual procedure
 - d. attach and use communication cable by following the service manual procedure
 - e. detach and test battery by following the service manual procedure
 - f. attach and use bluetooth and infra red dangles by following the service manual procedure

Assessment Methods: Multiple Choice Questions
Short answer Questions
Observation
Performance test

Learning Outcome 4: Symptoms diagnosis and repair

- Assessment Criteria:
- a. demonstrate and repair no signal by following the service manual procedure
 - b. demonstrate and repair no power by following the service manual procedure
 - c. demonstrate and repair no display by following the service manual procedure
 - d. demonstrate and repair no tone by following the service manual procedure
 - e. demonstrate and repair water damage by following the service manual procedure
 - f. demonstrate and repair hang-up by following the service manual procedure
 - g. demonstrate and repair LCD replacement by following the service manual procedure
 - h. demonstrate and repair open line by following the service manual procedure
 - i. demonstrate and repair flashing by following the service manual procedure
 - j. demonstrate and repair contact service by following the service manual procedure

- k. demonstrate and repair keypad problem by following the service manual procedure
- l. demonstrate and repair virus problem by following the service manual procedure
- m. demonstrate application upgrading by following the service manual procedure
- n. demonstrate and repair insert SIM by following the service manual procedure
- o. demonstrate and repair memory problem by following the service manual procedure
- p. demonstrate and repair auto shut-off by following the service manual procedure

Assessment Methods: Multiple Choice Questions
 Short answer Questions
 Observation
 Performance test

Learning Outcome 5: Troubleshooting hardware and software problem

- Assessment Criteria:
- a. perform BGA IC replacement by following the service manual procedure
 - b. perform backlight replacement by following the service manual procedure
 - c. perform speaker replacement by following the service manual procedure
 - d. perform LCD replacement by following the service manual procedure
 - e. perform key mat replacement by following the service manual procedure
 - f. perform flashing and unlocking procedure by following the service manual procedure
 - g. perform data uploading and downloading by following the service manual procedure

Assessment Methods: Multiple Choice Questions
 Short answer Questions
 Observation
 Performance test

Learning Outcome 6: Assembly and disassembly (Nokia Cell Phones)

- Assessment Criteria:
- a. perform cover assembly and disassembly by following the service manual procedure
 - b. perform chipboard assembly and disassembly by following the service manual procedure
 - c. perform chassis clips and lock removal and replacement by following the service manual procedure
 - d. perform snap on clips removal and replacement by following the service manual procedure
 - e. perform cell phone screw proper removal by following the service manual procedure

Assessment Methods: Multiple Choice Questions
Short answer Questions
Observation
Performance test