

Inspection Check List

Course Name: **PG Diploma in VLSI & Embedded Hardware Design-AVL500**

Course Specific Requirements		Remarks by Inspection Committee
Faculty	M-tech with Specialization in VLSI or B.Tech in (ECE/EEE/E & I/CSE and Allied Branches of electronics) with PG Diploma in VLSI/ 2 Years of Relevant Experience in VLSI	
Lab Support Staff	B.Tech in (ECE/EEE/E & I/CSE and Allied Branches of electronics) with PG Diploma in VLSI/ 2 Years of Relevant Experience in VLSI	
Class room & Lab/Workshop	Classroom facility to accommodate minimum batch size of 25 students with projector and other basic facilities Lab with PC's : 1 PC/2 Student Ratio Lab should have all the Hardware and Software Tools as mentioned below	
Hardware:	One board/equipment should be shared among 2 students (15 nos is required to run a batch minimum) FPGA Development Boards & Trainer Kits by Altera and Xilinx PSoC1 and PSoC3 trainer Kits by Cypress Semiconductors CROs Multimeter (DMM), Power supply's Bread-boards, Logic Analyzer ,Digital IC Testers, Microcontroller (8051) boards , Programmer	
Software:	License for all Tools minimum 15 nos for a batch size of 25~30 Simulation & Synthesis tools from Mentor Graphics/Cadence/Synopsys IC Nanometer tools from Mentor Graphics/ Back end tools from Cadence Xilinx ISE 14.0 or higher Altera Quartus II Version12.0 or higher Kiel C for Microcontroller programming PSoC Desginer & PSoC Creator from Cypress SemiconductorOrCAD/PADS LOGIC for PCB Design ASIC Design and Verification tools from Synopsys	
Test Books	Separate List attached –Annexure 1A	
Reference Books:	Separate List attached –Annexure 1B	

Signature of Committee Members

Annexure -1A (Text Books for reading)

1	Modern Digital Electronics by R.P Jain	
2	Digital Design by Wakerly	
3	Fundamentals of Digital Design by Charles H. Roth, Jr. , Larry L. Kinney	
4	Circuit Design with VHDL - V. A. Pedroni	
5	HDL Chip Design - A Practical Guide for Designing, Synthesizing and simulating ASICs and FPGAs using VHDL or Verilog by Douglas J. Smith	
6	Digital Design with RTL Design, VHDL, and Verilog by Frank Vahid	
7	VHDL Techniques, Experiments, and Caveats by Joseph Pick	
.8	Verilog HDL: A Guide to Digital Design and Synthesis by Samir Palnitkar Published by PHI	
9	Digital Integrated Circuits - A Design Perspective by Jan Rabaey, Anantha Chandrakasan and Borivoje Nikolic - 2nd edition	
10	CMOS Digital Integrated Circuits: Analysis and Design, S.M.Kang and Y.Leblebici, McGraw-Hill	
11	Total Quality Management; Third edition By: Dale H. Besterfield, Pearson Education Asia	
12	Product Design & Development; Third edition By: Karl T Ulrich & Steven D Eppinger; Mc Graw Hill	
13	Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. McKinlay, "The 8051Microcontroller and Embedded Systems using Assembly and C", 2nd Edition, Prentice Hall	
.14	Noise Reduction Techniques in Electronic Systems, 2nd edition; by: Henry W.Ott; JohnWiley & Son	
15	The beginner's Guide to PSoC Express by Oliver Bailey-Timelines Industries Inc.	
16	Designer's Guide to the Cypress PSoC by Robert Ashby- Newnes (ELSEVIER) ISBN-13: 978-0750677806	
17	System Investigation of Programmable Systems on Chip (PSoC) by Wolfgang Weidinger	
18	Introduction to Visual Embedded Programming: With the PSoC Express by Edward Currie	
19	PSoC® Mixed-Signal Array Technical Reference Manual (TRM) by Heather Montag	
20	FPGA Prototyping by VHDL Examples by Pong Chu	
21	RTL Hardware Design using VHDL by Pong Chu	
22	Advanced FPGA Design by Steve Kilts	
23	FPGA Simulation by Ray Salemi	
21	A Verilog HDL Primer by J Bhasker	
25	Writing test benches : Functional Verification of HDL Models by Janick Bergeron	

Annexure -1 B(Reference Text Books)

1	Digital Design, Principles & Practices, J.F. Wakerly , Prentice Hall.	
2	High-Speed Digital Design - A handbook of black magic, Johnson, Graham .	
3	Contemporary Logic Design, Gaetano Boriello, Randy H. Katz , Prentice Hall.	
4	FPGA-based System Design, Wayne Wolf, Prentice Hall, 2004.	
5	Fundamentals of Digital Logic with VHDL Design by Stephen Brown and Zvonko Vranesic.	
6	VHDL: Analysis and Modelling of Digital Systems by Zainalabedin Navabi.	
7	The VHDL Cookbook by Peter J. Ashenden.	
8	VHDL: A Logic Synthesis Approach By David Naylor and Simon Jones.	
9	A Verilog HDL Primer by J. Bhasker.	
10	The Verilog Hardware Description Language by Thomas, D . E . / Moorby, Philip R.	
11	Verilog HDL Synthesis, A Practical Primer by J. Bhasker.	
12	Introduction to VLSI Circuits & Systems by John P. Uyemura.	
13	CMOS Logic Design by John P. Uyemura.	
14	Predko, Myke, "Programming and Customizing the 8051Microcontroller", 1st Edition, McGraw Hill International.	
15	Schultz, Thomas W, "C and the 8051: Hardware, Modular Programming and Multitasking", Vol I, 2nd Edition, Prentice Hall.	
16	Stewart, James W, Miao, Kai X, "8051 Microcontroller: Hardware, Software and Interfacing", 2nd Edition, Prentice Hall.	
17	Data sheets of microcontroller and peripherals.	
18	User manuals of EDA tools.	
19	FPGA Prototyping by VHDL Examples by Pong Chu	
20	RTL Hardware Design using VHDL by Pong Chu	
21	Advanced FPGA Design by Steve Kilts	
22	FPGA Simulation by Ray Salemi	
23	Real Chip Design and Verification using Verilog and VHDL by Ben Cohen	
24	Writing test benches using System Verilog : Janick Bergeron	

Inspection Check List

Course Name: PG Diploma in ASIC Design and Verification-AV600

Course Specific Requirements		Remarks by Inspection Committee
Faculty	M-tech with Specialization in VLSI or B.Tech in (ECE/EEE/E & I/CSE and Allied Branches of electronics) with PG Diploma in VLSI/ 2 Years of Relevant Experience in VLSI	
Lab Support Staff	B.Tech in (ECE/EEE/E & I/CSE and Allied Branches of electronics) with PG Diploma in VLSI/ 2 Years of Relevant Experience in VLSI or Diploma with Three Year Experience in ASIC Design and Verification	
Class room & Lab/Workshop	Classroom facility to accommodate minimum batch size of 25 students with projector and other basic facilities Lab with PC's : 1 PC/2 Student Ratio Lab should have all the Hardware and Software Tools as mentioned below	
Hardware:	One board/equipment should be shared among 2 students. (15 nos is required to run a batch minimum) FPGA Trainer Kits: FPGA Development Boards & Trainer Kits by Altera FPGA Development Boards & Trainer Kits by Xilinx PSoC1 and PSoC3 trainer Kits by Cypress Semiconductors	
Software:	License for all Tools minimum 15 nos for a batch size of 25~30 CAD Tools: Simulation & Synthesis tools from Mentor Graphics/Cadence/Synopsys ASIC Design and Verification tools from Synopsys IC Nanometer tools from Mentor Graphics/ Back end tools from Cadence Xilinx ISE 12.0 or higher Altera Quartus II Version11.0or higher	
Text Books:	Separate List attached –Annexure 2A	
Reference Books:	Only Web References	

Signature of Committee Members

Annexure -2A (Text Books)

1	Modern Digital Electronics by R.P Jain. Digital Design by Wakerly Fundamentals of Digital Design by Charles H. Roth, Jr. , Larry L. Kinney	
2	Verilog HDL: A Guide to Digital Design and Synthesis by Samir Palnitkar Published by PHI	
3	Digital Integrated Circuits - A Design Perspective by Jan Rabaey, Anantha Chandrakasan and Borivoje Nikolic - 2nd edition CMOS Digital Integrated Circuits: Analysis and Design, S.M.Kang and Y.Leblicic, McGraw-Hill	
4	Writing Test benches: Functional Verification of HDL Models by Janick Bergeron	
5	Writing Testbenches using SystemVerilog - Janick Bergeron SystemVerilog For Verification - Chris Spear	
6	Verification Methodology Manual - Janick Bergeron Open Verification Methodology Cookbook - Mark Glasser	
7	FPGA prototyping by Verilog examples Chu, Pong P. John Wiley & Sons. Digital System Designs and Practices: Using Verilog HDL and FPGAs, Ming-Bo Lin	

Inspection Check List

Course Name: PG Diploma in Embedded Real Time Systems-AED600

Course Specific Requirements		Remarks by Inspection Committee
Faculty	M-Tech with Specialization in Embedded or B-Tech in ECE/EEE /Allied Branches with 2 year Experience in Embedded System Design or PG Diploma in Embedded System Design	
Lab Support Staff	B.Tech in (ECE/EEE/E & I/CSE and Allied Branches of electronics) with PG Diploma in Embedded System/ 2 Years of Relevant Experience in Embedded System or Diploma with Three Year Experience	
Class room & Lab/Workshop	Classroom facility to accommodate minimum batch size of 25 students with projector and other basic facilities Lab with PC's : 1 PC/2 Student Ratio Lab should have all the Hardware and Software Tools as mentioned below	
Hardware:	<p>One board/equipment should be shared among 2 students. (15 nos is required to run a batch minimum)</p> <p>8-bit 8051 Microcontroller Development System (SBC-51) 32-bit ARM Cortex M3 Microcontroller Development Systems (STM32L Discovery or similar),CAN Development kit, USB Development kit ,SPI Protocol Analyser Kit , I2C Protocol Analyser Kit , Linux Device Driver Development Kit , Wireless Modules - Zigbee, Bluetooth, WiFi, GSM, GPS and RFID , Additional components such as Sensors, ARM/ MSP430/ Raspberry Pi/ Beagle/ Arduino boards for project work.</p>	
Software:	<p>License for all Tools minimum 15 nos for a batch size of 25~30</p> <p>Keil C, gcc Compiler* Embedded Linux* ,VxWorks with 'x86 BSP RTLinux with 'x86 Developer Suite (DS-5) or KEIL MDK - ARM ,Chibi OS* or FreeRTOS* or similar CAN Network Protocol Analyser USB Protocol Analyser ,MATLAB Glomosim* ,* - Open source wireless simulator</p>	
Text Books:	Annexure 3A	
Reference Books:	Annexure 3B	

Signature of Committee Members

Annexure -3A(Text Books)

1	Embedded/Real Time Systems Concepts, Design and Programming Black Book, Prasad, KVK. Let us C by Yashwant Kanetkar 8051 Microcontroller and Embedded Systems – Mazidi, Muhammad Ali, Mazidi, Janice Gillispie	
2	GNU/LINUX Application Programming, M Tim Jones	
3	Embedded/Real Time Systems Concepts, Design and Programming Black Book, Prasad, KVK Published by Wiley DreamTech, 2003 Real-Time Embedded Multithreading, Edward L Lamie, CMP Books	
4	The Definitive Guide to the ARM Cortex M3, Joseph Yiu, Newnes Real-Time Embedded Multithreading, Edward L Lamie, CMP Books	
5	Linux Device Drivers: Rubini, Alessandro, Corbet, Jonathan	
6	Wireless Communications – Principles and Practice; by Theodore S Rappaport, Pearson Education Pvt. Ltd., Delhi Glomosim user Manual	

Annexure -3B(Reference Text Books)

1	<p>Embedded Systems Architecture Programming and Design: Raj Kamal, Tata McGraw Hill. Embedded C, Pont, Michael J C Programming by Worthington, Steve C Programming language, Kernighan, Brian W, Ritchie, Dennis M Art of C Programming, JONES, ROBIN, STEWART, IAN C Programming for Embedded systems, Zurell, Kirk C and the 8051 Programming for Multitasking – Schultz, Thomas W Embedded Microcontrollers – Intel Hand Book Programming and Customizing the 8051 microcontroller – Predko, Myke 8051 Microcontroller: Hardware, Software and Interfacing – Stewart, James W, Miao, Kai X C and the 8051: Hardware, Modular Programming and Multitasking Vol 1 – Schultz, Thomas W</p>	
2	<p>Embedded Linux: Hardware, Software, and Interfacing, Hollabaugh, Craig, Embedded Software Primer: Simon, David E. UNIX Network Programming : Steven, Richard Linux: The Complete Reference: Petersen, Richard Embedded Linux Primer: A Practical Real-World Approach: Christopher Hallinan Embedded/Real-Time Systems: Concepts, Design and Programming: The Ultimate Reference, Dr. K.V.K.K. Prasad, Published by Wiley DreamTech, 2003 Unix Network Programming, W. Richard Stevens, Addison – Wesley Professional Computing Series, 2003.</p>	
3	<p>Embedded Systems Architecture Programming and Design: Raj Kamal, Tata McGraw Hill Embedded Linux: Hardware, Software, and Interfacing, Hollabaugh, Craig, RTLinux Reference manual. VxWorks Programmers Guide VxWorks Reference Manual</p>	
4	<p>Assembly language Programming ARM Cortex-M3, Vincent Mahout, Wiley Embedded Linux: Hardware, Software, and Interfacing, Hollabaugh, Craig, Embedded/Real-Time Systems: Concepts, Design and Programming: The Ultimate Reference, Dr. K.V.K.K. Prasad, Published by Wiley DreamTech, 2003 ARM System Developer's Guide - Designing and Optimizing System Software by: Andrew N Sloss, Dominic Symes, Chris Wright; 2004, Elseiver. Cortex M3 Reference manual. STM32Ldiscovery datasheets, reference manuals & Application notes. Chibi-OS / RT API reference manuals & documents.</p>	
5	<p>Dr. K.V.K.K. Prasad, Embedded/Real-Time Systems: Concepts, Design and Programming: The Ultimate Reference, Published by Wiley DreamTech, 2003. W. Richard Stevens, Unix Network Programming, Addison – Wesley Professional Computing Series, 2003 Embedded Software Primer: Simon, David E. UNIX Network Programming : Steven, Richard Embedded Linux Primer: A Practical Real-World Approach: Christopher Hallinan Application Notes : CAN, USB, I2C, SPI protocols Linux Kernel Development: Love, Robert Linux Kernel Programming: Algorithms and Structures of version 2.4: Beck, Michael At Al</p>	
6	<p>Modelling the Wireless propagation channel: Simulation Approach with Matlab, Fontan, F Perez, Espineira, P Marino John Wiley & Sons Matlab Tutorials. Wireless Sensor Networks: information processing by approach, ZHAO, FENG, GUIBAS and LEONIDAS J, ELSEVIER, New Delhi Wireless Network Evolution: 2G to 3G by GARG, VIJAY K, Pearson Education (Singapore) Pvt. Ltd., Delhi</p>	