6.5 Internal Quality Assurance System

6.5.2: Quality assurance initiatives of the institution include:

1. Regular meeting of Internal Quality Assurance Cell (IQAC); quality improvement initiatives identified and implemented
2. Academic and Administrative Audit (AAA) and follow-up action taken
3. Collaborative quality initiatives with other institution(s)
4. Participation in NIRF and other recognized rankings
5. Any other quality audit/accreditation recognized by state, national or international agencies such as NAAC, NBA etc.

INDEX

Sr. No.	Contents	Pg. no
1	REGULAR MEETINGS OF THE IQAC HELD	3
2	ACADEMIC AUDIT REPORT (INTERNAL AND EXTERNAL)	4
	EXTC ENGINEERING DEPARTMENT (COMPLETE REPORT)	4
	ELECTRICAL ENGINEERING DEPARTMENT (SAMPLE COPY)	139
	CIVIL ENGINEERING DEPARTMENT (SAMPLE COPY)	154
	MECHANICAL ENGINEERING DEPARTMENT (SAMPLE COPY)	163
	COMPUTER ENGINEERING DEPARTMENT (SAMPLE COPY)	181
	HUMANITIES AND APPLIED SCIENCES (SAMPLE COPY)	192
	MCA DEPARTMENT (SAMPLE COPY)	197

Regular minutes meetings of the IQAC held:

https://www.viva-technology.org/New/wp-content/uploads/2023/05/IQAC-minute-record-1.pdf

Academic Audit Report:

Department wise Academic Audit report (Internal and External Audit)

EXTC ENGINEERING DEPARTMENT

1. INTERNAL AUDIT REPORT

- **Year (2021-22):**

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Electronics and Telecommunication Engineering

Audit for AY 2021-22 **Date: 13/12/2022**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. Good number of bridge courses and internal quality improvement initiatives for students.
3. Activities under professional bodies are appreciable.
4. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
5. Students must be encouraged for internship and certification courses.
6. IETE professional body is actively arranging workshops and project competitions in the department.
7. Activities taken for internal quality improvement is appreciable.
8. More efforts required for Alumni engagement.
9. Some awareness cum guidance programs can be arranged for HSC and diploma student to increase admissions.

13.12.2022
Principal
Dr. Arun Kumar

Auditor Name & Signature

Prof. Lissy Jose (HOD CIVIL)

Prof. Chandani Patel (HOD MCA)

Prof. Karishma Raut (NAAC coordinator)

VIVA INSTITUTE OF TECHNOLOGY VIVA VIRAR

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology

Academic Audit : AY 2021-22

Internal Audit **Date: 13/12/2022**

Sr. No.	Name of Faculty	Sign
1	Meena Perla	
2	Pratik Parsewar	
3	KUSHAL SUVARNA	
4	Ashwini Hariyan	
5	Nutan Malekar	
6	Amit P Darge	
7	Sujata R. Chaudhari	
8	Vasudev M. Patil.	
9	Archana Ingle	
10		
11		
12		

Auditor Name with Sign:

Kashishree Raut
Chandani Patel
Lissy JOSE

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Academic Audit Report

Name of the department: Electronics and Tele-Communication Department

Audit for AY 2021-22 **Date: 13/12/2022**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	75 to 85 %	For Defaulters: written work and extra to come during PL Poor response. During pandemic not required.
2	Coverage of syllabus	90-100 %	Records are maintained in the course file.
3	Student feedback	Faculty as well as facility feedback taken	Records are maintained.
4	Continuous Evaluation	• Monthly syllabus Completion • Semester wise and Subject wise Orientation • Mentors • Remedial Lectures • Fortnightly meeting	It is Suggested to maintain attendance record as well as report of orientation program. During pandemic mentoring is affected.
5	Quality of Unit test paper	• 70 to 80% Change • All CO's are covered • As per university pattern	Appropriately done Pattern is updated during pandemic as per the guidelines given by UoM.
6	Analysis of University result Odd 100 84.62 100 Even 52 84.62 85.31	Overall good Result. Records are maintained.	Need to improve SE result. Impact of online to offline is observed due to change in pattern.
7	Remedial classes	Remedial lectures are taken for • ATKT students • UT result improvement	Records are maintained for even semester. During pandemic not required

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8	Seminars/ guest lecture	Total 8 guest lectures have been conducted.	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
9	Industrial Visits	Two Industrial Visits has been arranged.	
10	Workshops	One workshop has been arranged annually.	
11	Student counseling	Mentor system is implemented with ratio of 1:20. Parent teachers meeting has been conducted annually.	Records are maintained. During pandemic mentoring is affected. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam.
12	Faculty Development Programs	1 STTP had been conducted. UoM approved.	Records are maintained.
13	Infrastructure	Appropriate Infrastructure -3 classrooms -9 labs -3 Projectors	Proper maintenance is done on regular basis.
14	Self-Learning resources	Following Initiative has been taken by the department • Google Classroom • NPTEL Video lectures • Virtual lab • Department Library • You tube channel	Good efforts. Records are maintained. YouTube channel can be improved.
15	Student Participation	• Participation in NCRENB is compulsory for students • Good no. of prizes in other colleges	Student Achievements are appreciable.
16	Internal Quality Assurance	• Presentation • Aptitude lectures • Mini projects intercollege showcase • Value Added Courses • Flip class • Role play	Activities conducted in department are really appreciable.
17	Placement	Total 27 placements had been done.	Improvement is seen as compared to previous years.

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			However, More efforts required.
18	Student – Teacher Ratio	14.95 odd sem 13.73 even sem	-
19	Unique features of Department	• Extc you-tube channel • Auto Rickshaw meter testing • Contribution to NCRENB • Aptitude test • I.V. for faculty.	Good Initiative
20	Newsletter/ Magazine	• VIVA-Converge annual magazine • Annual Newsletter	Records are maintained.

Principal

Dr. Arun Kumar

Auditor Name & Signature

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Academic Audit Report

Name of the department: Electronics and Tele-Communication Department

Audit for AY 2021-22 **Date: 13/12/2022**

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2021-22

Academic Audit for AY 2021-22 Odd semesters carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1 Teaching & Learning Process

SEM	Subject	No. Of available hours	No. Of hours engaged	Short fall	Corrective action	Innovation in teaching method
III	EM-III	35	35	-	-	Use of Google Classroom
	EDC	30	30	-	-	Use of Google Classroom
	DSD	32	32	-	-	Use of Google Classroom
	NT	36	36			Use of Google Classroom
	EICS	35	40	-	-	Use of Google Classroom
V	DC	39	39	-	-	Use of Google Classroom
	DTSP	39	39	-	-	Use of Google Classroom
	DVLSI	37	37	-	-	Use of Google Classroom to provide softcopy of notes. Animated video shown for better understanding, online quiz
	RSA	46	46			PPT used in online mode and live problem solving sessions conducted. Online quiz and NPTEL videos demo shown.
	DCC	39	39	--	--	NPTEL videos were shared for more conceptual learning
	PCE-II	25	23	2	Covered During Practical Session	--
VII	ME	48	48	-		PPT used in online mode and live problem solving sessions conducted. Online quiz and NPTEL videos demo shown.
	MCS	46	46	--	--	PPT used in online mode and live problem solving sessions conducted. Online quiz and NPTEL videos demo shown.
	OC	47	47	--	--	PPT and video lecture notes were circulated
	ICE	51	51			PPTs and demo with developed videos, NPTEL videos are shown and discussed.
	MIS	35	35	--	--	Use of Google Classroom

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Department of Electronics and Telecommunication Engineering

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
III	EDC	CRO, Function generator, power supply, multimeter	CRO, Function generator, power supply, multimeter	--
	DSD	Digital Trainer kits,xillinx	Digital Trainer kits, xillinx	
	EICS	Bridge kits,LVDT kit	Bridge kits,LVDT kit	-
	SKILL LAB C++	Dev c++,JDK	Dev c++,JDK	-
	MP 1A	Computer lab with 12 PCs, PCB design software	Computer lab with 12 PCs, PCB design software	-
V	DC	Modulation Kits, Matlab	Modulation Kits, Matlab	
	DTSP	Computer lab with 20 PCs with SCILAB	Computer lab with 20 PCs with SCILAB	--
	DVLSI	Computer lab with 20 PCs. Microwind 3.1 and LT Spice software	Computer lab with 20 PCs. Microwind 3.1 and LT Spice Software	
	PCE-II	Computer lab with 20 PCs	Computer lab with 20 PCs	Conducted in Online mode
	MP 2A	Computer lab with 20 PCs. code composer and Arduino IDE	Computer lab with 20 PCs. code composer and Arduino IDE	-
VII	ME	Microwave Test bench, DSO/CRO, Scilab	Microwave Test bench, DSO/CRO, Scilab	--
	MCS	20 PC's with MATLAB/SCILAB	20 PC's with MATLAB/SCILAB	Conducted in online mode, MATLAB Online available
	OC	Optical trainer kit, OptiSim software	Optical trainer kit	Open source software is used wherever possible
	ICE	Cisco packet tracer and MATLAB, Python, VOIP, CISCO switch and router	Cisco packet tracer and MATLAB, Python, VOIP, CISCO switch and router	Students are allowed to use any coding language as per their proficiency.

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Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
III	EM-III	CO1	2.44	2.98	Able to understand Laplace transform I Standard function and analyses methods, and application.	Taking more examples depend on all terms in Laplace transform
		CO2	2.44	2.98	Able to understand inverse Laplace transform II and application.	Taking more examples depend on all terms in inverse Laplace transform
		CO3	2.91	2.74	Able to determination of Fourier coefficient, expansion of Fourier series depend on different intervals,analyse complex form of Fourier series on integrals and Fourier transform	Real world examples related to Fourier series and Fourier transform
		CO4	2.58	2.94	Able to Understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic function	Implemented by taking application of vectors in algebra, differential
		CO5	2.58	2.94	Able to Use matrix algebra to solve the engineering problems.	Implemented by taking application of vectors in integration
		CO6	3.02	3.71	Able to Apply the concepts of vector calculus in real life problems.	Taking more examples depend on this
III	EDC	CO1	2	3	Students should be able to understand working of various Electronic Devices.	Student must be motivated to improve writing skills.
		CO2	2	3	Students should be able to perform dc analysis of BJT, FET & MOSFET circuits in various configuration.	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	3	Students will be able to perform and analyze small signal modeling of BJT, JFET & MOSFET	Laboratory exercises need to conduct for understanding.More numerical practice needed
		CO4	2	3	Students should be able to understand and perform Low frequency & high frequency analysis of BJT, JFET & MOSFET	More numerical practice needed for different configurations.
		CO5	2	3	Students should be able to understand and perform analysis of	Laboratory exercises need to conduct for

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Department of Electronics and Telecommunication Engineering

					Large signal Amplifiers	understanding. More numerical practice needed.
		CO6	2	3	Students will able to understand differential amplifiers & its applications in OpAmp	More numerical practice can be taken through tutorials.
III	DSD	CO1	2	3	Students could recognize and perform interconversion and coding for binary numbers.	Student must be motivated to get familiarize with features of calculator for interconversion of number systems.
		CO2	2	2.9	Students need to practice to draw, simplify Boolean Equations..	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	3	Students could design combinational logic circuits.	Laboratory exercises need to conduct for deeper understanding. More numerical practice needed.
		CO4	2	3	Students need practice for drawing state diagrams of finite state machines.	Practice problems can be taken up.
		CO5	2	2.95	Students were not convinced for selecting a particular logic devices.	Different applications for different logic devices can be shown using case studies and industrial visits.
		CO6	2	3	Students need practice to visualize the digital circuits as an entity for VHDL implementation.	Laboratory exercises need to conduct for understanding. More coding practice needed.
III	NT	CO1	3	2.9	Students are able to analyze DC and AC circuits	More examples required
		CO2	2	2.8	Students are able to understandnetwork topologies and graph theory for analyzing circuits	More examples required
		CO3	2	2.85	Students are able to evaluate time and frequency domain responses of RL,RC,RLC circuits	More practical examples required
		CO4	2	2.7	Students are able to understanddriving point and transfer functions and stability of circuits	More examples required
		CO5	2	2.8	Students are able to understandtwo port networks and different parameters used for analysis	More practice required

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Department of Electronics and Telecommunication Engineering

		CO6	2	2.8	Students are able to synthesis RLC circuits	More practice required
III	EICS	CO1	2.33	2.8	Students were able to understand basics. The definitions were a bit tough to memorize	Real life examples like mega ohm bridge and a situation of measurement was given.
		CO2	2	2.8	The working of transducers was very simple though practical is missing	Some selected transducers were shown to students to explain working.
		CO3	2	2.7	Telemetry and data acquisition system have block diagram which were tough to memorize.	The real world examples were discussed to bring more awareness of process.
		CO4	2.5	2.8	The block diagram reduction critical rules were a bit tough to understand.	Diagramatic way of drawing helped them to understand the rules
		CO5	2.5	2.8	Time domain analysis was simple but root locus was a bit tricky for students.	A way of remembering steps of root locus was made and explained
		CO6	2.5	2.8	Frequency domain analysis was very lengthy.	The methods were explained with video lectures

V	DC	CO1	2	2.2	The student have been able to apply the concepts of information theory in source coding.	More ICT tools can be added.
		CO2	3	2.2	The student have been able to Compare different error control systems and apply various error detection codes.	More efforts required on Tutorials to improve writing skills.
		CO3	2	2.2	The students are able to Analyze different error correction codes	More practice problems can be taken.
		CO4	1	2.2	The students are able to Compare various baseband transmission methods for digital signals	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	2	2.2	The students are able to Evaluate the performance of optimum baseband detection in the presence of white noise.	More efforts required on Tutorials to improve writing skills.
		CO6	2.5	2.2	The students are able to Compare the performances of different digital modulation techniques	More efforts required on Tutorials to improve writing skills.
V	DTSP	CO1	2	3	Students were able to understand DFT and FFT algorithms	Need to take more numerical.
		CO2	2	3	Students were able to solve numerical on IIR filter design	Need to take more numerical
		CO3	2	3	Students were able to solve numerical on FIR filter design	More practice is required to improve understanding of numerical.

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Department of Electronics and Telecommunication Engineering

		CO4	2	3	Students were able to understand finite length effects on digital filters	Need to relate with real world scenario.
		CO5	2	3	Students were able to understand various DSP processors & their architecture.	Need to take real time applications.
		CO6	2	3	Students were able to understand real world application of DSP.	Need to relate with real world applications.
V	DVLSI	CO1	3	2.2	Students were able to understand process flow of VLSI Design and MOSFET operation from VLSI design perspective.	Set higher target level
		CO2	3	2.2	Students were able to derive expressions for performance parameters of basic building blocks like CMOS inverter. Able to design, implement and realize various combinational logic circuits	Set higher target level
		CO3	2.5	2.1	Students were able to design, implement and verify combinational and sequential logic circuits using various MOS design styles.	Set higher target level
		CO4	2.5	2.1	Students were able to understand various types of semiconductor memories and its operation.	Set higher target level
		CO5	3	2.2	Students were able design and realize various combinational and sequential circuits for given specifications.	Set higher target level
		CO6	3	2.2	Students were able to do RTL design and programming	Set higher target level
V	RSA	CO1	2	3	Students were able to apply theory of probability in identifying and solving relevant problems	Set higher target level
		CO2	2	2.95333	Students were able to differentiate continuous and discrete random variables and their distributions	Set higher target level
		CO3	2.5	3	Students were able to analyze mean, variance, and distribution function of random variables and functions of random variables.	Set higher target level
		CO4	2.5	2.96667	Students were able TO analyze joint CDF and pdf of multiple random variables and its functions	Set higher target level
		CO5	2	3	Students were able to define a random process, determine the type	Set higher target level

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Department of Electronics and Telecommunication Engineering

					of the process and find the response of LTI system for WSS process	
		CO6	2	2.96667	Students were able to explain linear regression algorithms and apply for predictive applications.	Set higher target level
V	DCC	CO1	2.5	2.1	Students are able to understand need of data compression and implement different text compression techniques & interpret different images. But need to improve writing skills. More practice is required	Student must be motivated to practice methods and improve writing skills
		CO2	2.5	2.1	Students are able to understand audio and video compression.	Student must be motivated to improve writing skills
		CO3	2.5	2.1	Students are able to understand modular arithmetic and implement symmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills.
		CO4	3	2.1	Students are able to understand number theory	More practice can be taken and need to improve writing skills.
		CO5	3	2.1	Students are able to implement asymmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills.
		CO6	2.5	2.1	Students are able to understand network security	Scope of all these topics can be increased for better understanding and need to improve writing skills.
V	PCE-II	CO1	2	3	Able to Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.	More practice will be provided
		CO2	2	3	Able to strategize their personal and professional skills to build a professional image and meet the demands of the industry.	More practice will be provided
		CO3	2	3	Emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.	More demonstrations will be provided
		CO4	2	3	Deliver persuasive and professional presentations.	Mock presentations, Group and individual, PEER presentations are organized

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
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Department of Electronics and Telecommunication Engineering

		CO5	2	3	Develop creative thinking and interpersonal skills required for effective professional communication.	Group and individual, PEER presentations and GDs are organized
		CO6	2	3	Apply codes of ethical conduct, personal integrity and norms of organizational behaviour.	More practice on IPRs

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

VII	**ME**	CO1	3	3	The student will be able to describe the basics microwave , scattering parameters and to design impedance matching network using lumped and distributed parameters	Written class test should be conducted for better result
		CO2	3	2.95	The student will be able analyze the wave propagation in TE, TM or TEM modes, in structures such as rectangular waveguides and to discuss different passive devices	More Practice required
		CO3	3	3	The student will be able to identify and describe different microwave tubes.	Written class test should be conducted for better result
		CO4	3	3	The student will be able to understand different microwave semiconductor diode.	Written class test should be conducted for better result
		CO5	3	3	The student will be able to discuss and demonstrate different microwave measurement techniques	Written class test should be conducted for better result
		CO6	3	3	The student will be able to discuss the basics of Microwave Integrated circuits.	Written class test should be conducted for better result
VII	**MCS**	CO1	2	2.65	Students are able to understand the concept of cellular system design.	In online mode, students performed well for MCQ's. Must be guided for proper representation and content for improvement in writing skills
		CO2	2	2.65	Students are able to understand different types of Mobile radio propagation.	
		CO3	2	2.8	Students are able to understand evolution of mobile communication generations and system architecture of 2G, 2.5G systems with their characteristics and limitations.	
		CO4	2	2.75	Students are able to understand system architecture of 3G systems.	
		CO5	2	2.75	Students are able to understand network structure of 3 GPP in detail.	
		CO6	2	2.8	Students will be able to understand emerging technologies required for fourth generation mobile systems such as Cognitive Radio, MIMO etc.	
VII	**OC**	CO1	3	3	Students are able to understand the fundamentals principles of optics and light wave to design optical fiber Systems	Real time examples, applications and practice is required
		CO2	2	2.1	Students are able to explain transmission characteristics of optical fiber communication.	Writing skills should be developed
		CO3	3	3	Students will be able to understand	More applications and

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Department of Electronics and Telecommunication Engineering

					different light sources with applications.	there use needed to apply in real time.
		CO4	2	2.2	Students will be able to write and explain principles and characteristics of various detectors with its performance.	Written class test should be conducted for better result
		CO5	3	3	Students will be able to understand working and characteristics of couplers and multiplexer.	More applications and there use needed to apply in real time.
		CO6	2	2.1	Students are able to calculate parameters for optical link	More practice should be done
VII	ICE	CO1	2	3	The student are able to implement and analyze working of global internet including client server operating system and application layer protocols	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO2	2	3	The student are able to name, examine and understand services offered by TCP and UDP.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO3	2	3	The student are able to design and implement LAN using static and dynamic addressing techniques including subnetting.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO4	2	3	The student are able to illustrate internet security protocols and security services.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO5	2	3	The student are able to discuss and demonstrate multimedia communication standards and compression techniques.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO6	2	3	The student are able to discuss the multimedia communication across the networks and QoS.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
VII	MIS	CO1	2	3	Students understand Computer Based Information Systems, Impact of IT on organizations using some practical examples	Set higher target level
		CO2	2	2.87	Students understands difference between data information and knowledge. How much it is important for daily life.	Set higher target level
		CO3	2	3	Student understands what the threats to IS are and how to avoid information leak. What are the legal	Set higher target level

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Website: www.viva-technology.org
Department of Electronics and Telecommunication Engineering

					issues arise due information sharing.	
		CO4	2	3	Student understand how web sites are evolving from 1980 to 2022. B2B, B2C and C2C markets are working.	Set higher target level
		CO5	2	3	Students understands how computer networks are connected and information is shared through internet.	Set higher target level
		CO6	2	3	Students understands how transaction processing system is works, Enterprise resource planning is working.	Set higher target level

References:

1. Course file I (Path: in the department)
2. Course Summary (path: \\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)
3. Attainment level and result analysis

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2021-22

Academic Audit for AY 2021-22 **Even** semester is carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1(b): Teaching & Learning

SEM	Subject	No. Of available hours	No. Of hours engaged	Shortfall	Corrective action	Innovation in teaching method
IV	EM-IV	36	36	-	-	Use of Google Classroom to provide softcopy of notes. . More practice examples is given during tutorials.
	MC	30	30	-	-	Use of Google Classroom to provide softcopy of notes. Real time examples and animated video shown for better understanding
	LIC	35	35			Use of Google classroom
	SS	40	40	-	-	Use of Google classroom for reference boooks. Virtual Lab experiments conducted for proper understanding. More practice is given during tutorials.
	PCE	26	26	-	-	Video lectures was showed from NPTEL
VI	EMA	36	36			Use of Google classroom for reference boooks
	CCN	35	35	--	--	
	IPMV	40	40	--	--	Use of google classroom, certification courses like MATLAB IP on ramp
	ANNFL	36	36	-	-	PPTs and videos, Flip class are used for important topic for better understanding.
	DBMS	32	31	1	Completed in stipulated time	PPT used in online mode and live problem solving sessions conducted. Online quiz
VIII	RFD	48	45	3	Syllabus covered	PPT used in online mode and live problem solving sessions conducted. Online quiz and NPTEL videos demo shown.
	WN	45	45	--	--	
	SCOM	41	41	-	-	Use of Google Classroom to provide softcopy of notes. Animated videos shown for better understanding
	PM	31	31	-	-	-

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Department of Electronics and Telecommunication Engineering

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
IV	MC	Computer Lab with 20 PCs with Keil µVision 4 and Keil µVision 5	Computer Lab with 20 PCs with Keil µVision 4 and Keil µVision 5	
	LIC	Bread board, multimeter, LT-SPICE software	Bread board, multimeter, LT-SPICE software	--
	PCE	Communication kit, CRO, Function generator, Power supply	Communication kit, CRO, Function generator, Power supply	--
	Skill lab Python	Visual studio,python 3.9	Visual studio, python 3.9	--
	MP 1B	KEIL SOFTWARE,PC,Arduino uno,raspberry pi	KEIL SOFTWARE,PC,Arduino uno,raspberry pi	--
VI	EMA	IE3D, Antenna trainer kit, CRO,	IE3D, Antenna trainer kit, CRO,	
	CCN	Cisco packet tracer software, networking hardware devices	Cisco packet tracer software, networking hardware devices	--
	IPMV	MATLAB,PC	MATLAB,PC	
	Skill lab Linux	Linux using Ubuntu and Virtual Machine	Linux using Ubuntu and Virtual Machine	--
	MP 2B	Computer Lab with PCs	Computer Lab with PCs	
VIII	RFDL	Network analyser, RF sim, Vsim. Scilab	Network analyser, RF sim, Vsim. Scilab	--
	WNL	Scilab, Wireshark, tinkercad	Scilab, Wireshark, tinkercad	
	SCOML	Trainer kits and MATLAB, Python.	Trainer kits and MATLAB, Python.	Students are allowed to use any coding language as per their proficiency.

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Department of Electronics and Telecommunication Engineering

Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
IV	EM-IV	CO1	3	3	Ablity to learn Complex Integration , Taylor's and Laurent's series , singularities, poles Residue theorem of f(z) and Applications of Residue theorem to evaluate real Integrals of different types.	Taking more examples depend on all terms in variation
		CO2	3	3	Ablity to understand the concept of correlation and regression . Demonstrate an ability to identify problems in the field of Electronics and Telecommunication and solve it.	Real world examples related to vectors.
		CO3	3	3	Able develope Vectors in n-dimensional vector space, Metric spaces , Norms and normed vector spaces, Inner products and innerproduct spaces,The Cauchy-Schwarz inequality, orthogonal Subspaces, Gram-Schmidt process	Taking more examples depend on this.
		CO4	3	3	Ablity tounderstand the Random variable , and able to find the probability distribution.	Implemented by taking application of complex integration.
		CO5	2.5	2.9	able to understand the concept of correlation and regression . Demonstrate an ability to ident Use the concept of Quadratic forms and Singular value	Implemented by taking application of complex integration.

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					decomposition which are very useful tools in various Engineering applications ify problems in the field of Electronics and Telecommunication and solve it.	
		CO6	**2.5**	2.9	demonstrate basic knowledge of Calculusof variation in Euler Langrange equation, Functions involving higher order derivatives : Rayleigh-Ritz method	Implemented by taking application of complex integration
IV	**MC**	CO1	2	1.3	Students were able to understand computer system.	More efforts required on Tutorials to improve writing skills.
		CO2	2	1.3	Students were able to understand memory system.	More efforts required on Tutorials to improve writing skills.
		CO3	2	1.3	Students were able to draw and describe architecture of 8051 microcontroller.	More efforts required on Tutorials to improve writing skills.
		CO4	2	1.3	Students were able to write assembly language program and interface various peripheral devices to the 8051 microcontroller.	More practice for programming is required
		CO5	2	1.25	Students were able to draw and describe architecture of ARM7 microcontroller and write assembly language program for ARM7 microcontroller.	More practice for programming is required
		CO6	2	1.25	Students were able to design microcontroller applications.	Need of Case studies for practice.
IV	**LIC**	CO1	2.66	1.4	Non linear applications of Opamp was a little tough for students	Working of transistor was being revised
		CO2	2.5	1.4	Timer IC operation was a bit difficult for students to understand	Practical sessions was involved to bring more depth in concepts
		CO3	2.5	1.4	Regulator IC designing was tough for some students	The working of opamp as comparator and analyzing it instant by instant helped them to get output graph

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Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

		CO4	2.5	1.4	Function block diagram of VCO and PLL IC was done	The pin configuration was given special pointer tags to remember and hence its working
		CO5	2.5	1.4	Non linear applications of Opamp was a little tough for students	The working of regulator IC was demonstrated with the help of practical.
		CO6	2.5	1.4	Timer IC operation was a bit difficult for students to understand	Practical knowledge was enhance during working on laboratory part
IV	SS	CO1	2	1.35	Students are able to understand classification of signals and systems and will be able to perform operations on signals.	More practice need to be taken to clear the concept.
		CO2	2	1.3	Students are able to analyze CT and DT LTI signals and systems in time domain.	More practice need to be taken to clear the concept.
		CO3	2	1.4	Students are lagging in finding easiest method of solution for university exam questions.	More practice need to be taken to clear the concept.
		CO4	2	1.3	Students are lagging in finding easiest method of solution for university exam questions.	More practice need to be taken to clear the concept.
		CO5	2	1.35	Students are able to analyze D.T. LTI system using Z-Transform	More practice need to be taken to clear the concept.
		CO6	2	1.25	Students are able to realize (construct) different structures for FIR and IIR systems.	More practice need to be taken to clear the concept.
IV	PCE	CO1	2	1.4	Students were able to understand different noises in communication system and basics of analog communication.	Practical & tutorial were conducted on this topic.
		CO2	2	1.4	Students got the knowledge of AM modulation	Numericals given for practice

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Department of Electronics and Telecommunication Engineering

					technique	
		CO3	2	1.4	Student got the knowledge of angle modulation technique	Practicals and tutorials were taken on this topic.
		CO4	2	1.4	Students were able to describe sampling technique and use it in modulation process.	They have used the sampling process in digital modulation technique.
		CO5	2	1.35	Students were able to draw and explain analog pulse modulation technique.	Practically made them understand Analog pulse modulation technique.
		CO6	2	1.4	Students were able to explain digital modulation technique.	Tutorial and practical were conducted on this topic.
VI	EMA	CO1	2.25	1.35	Students will learn basics of electrostatics and different laws, theorem	More practice is required to improve solving skills.
		CO2	2.25	1.3	Students will be understand the Maxwell's equation	More practice is required to improve solving skills.
		CO3	2.33	1.4	Students will be able to understand fundamental parameters and radiation mechanism of antenna	More practice is required to improve solving skills.
		CO4	2.33	1.3	Students will be able to understand designing and application of array	More practice is required to improve solving skills.
		CO5	2.33	1.4	Students will be able to understand features of special type of antennas	More practice is required to improve solving skills.
		CO6	2.33	1.3	Students will be able to learn about radio wave propagation	More practice is required to improve solving skills.
VI	CCN	CO1	2.5	2.2	Students are able to Analyze network topologies, hardware devices, addressing schemes and the protocol stacks	Set higher target
		CO2	3	2.2	Students are able to Compare various transmission media and broadband technologies	Set higher target, and conduct practical session for better understanding
		CO3	2.75	2.2	Students are able to Analyze the flow control, error control and the medium access control techniques	Practical knowledge should be made available by site visit
		CO4	3	2.15	Student are able to Judge network layer addressing and routing schemes	Set higher target, extra lecture and doubt clearing session will be organize
		CO5	3	2.2	Student are able to Analyze connection oriented and	Actual router implementation concept should be clear

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Department of Electronics and Telecommunication Engineering

					connectionless services	
		CO6	3	2.2	Student are able to Apply the knowledge of application layer protocols	Set higher target
VI	IPMV	CO1	2	3	The student will be Understand fundamentals of image processing and machine vision	More efforts required on Tutorials to improve writing skills.
		CO2	1.5	3	The student will be able to Enhance the quality of image using spatial and frequency domain techniques for image enhancement	More efforts required on Tutorials to improve writing skills.
		CO3	2	3	The student will be able to Learn image morphology and restoration techniques	More efforts required on Tutorials to improve writing skills.
		CO4	2	2.25	The student will be able to Learn image segmentation techniques based on principle of discontinuity and similarity using various algorithms.	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	2	3	The student will be able to Represent boundaries and shapes using standard techniques.	More efforts required on Tutorials to improve writing skills.
		CO6	2	2.75	The student will be able to Classify the object using different classification methods	More efforts required on Tutorials to improve writing skills.
VI	ANNFL	CO1	**3**	1.4	The students are able to comprehend the concepts of biological neurons and artificial neurons but lagging in interpretation.	More practice is required to improve understanding and writing skills.
		CO2	**2.5**	1.4	The student are able to analyze the feed-forward and feedback neural networks and their learning algorithms but lagging in following algorithm steps.	More practice is required to improve solving skills.
		CO3	**3**	1.4	The students are able to analyze unsupervised neural networks and algorithms but lagging in following algorithm steps.	More practice is required to improve solving skills.

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VIVA Institute of Technology
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Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

		CO4	**2.25**	1.25	The student will be able to study neural networks based methods to solve real world complex problems but lagging in interpretation.	More practice is required to improve understanding and writing skills.
		CO5	**2.5**	1.3	The student will be able to build a simple CNN model for image classification by learning the neural network training and design concepts but lagging in interpretation.	More practice is required to improve understanding and writing skills.
		CO6	**2.5**	1.3	The student will be able to analyze the application of fuzzy logic and fuzzy inference systems to real world problems but lagging in following algorithm steps.	More practice is required to improve solving skills.
VI	**DBMS**	CO1	2	2.2	Students understood the evolution of database very well	Theory was explained using video lectures
		CO2	2	2.2	The entire architecture of database was very well explained	Diagram and figures were more elaborately explained
		CO3	3	2.15	ER diagram being a wonderful tool towards analysis of database design	Diagram was explained with different case studies and practices
		CO4	3	2.15	Relational algebra and calculus though interesting but students found it difficult	Relational algebra and calculus was explained with more examples
		CO5	3	2.15	The constraints and views were difficult for students	Examples will prove very beneficial for deeper understanding
		CO6	2	2.15	Students found that transaction management was a very important aspect in today's growing technology	Roleplay was being conducted to explain transaction management
VIII	**RFD**	CO1	3	1.4	Students were able to design and appraise RF filters	More practice required
		CO2	3	1.4	Students were be able to design and appraise RF amplifiers	More practice required

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VIVA Institute of Technology
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Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

		CO3	2.5	1.4	Students were be able to design and appraise RF oscillators	More practice required
		CO4	2	1.4	Students were able to analyze and design frequency synthesizers	More practice required
		CO5	2.5	1.4	Students were be able to analyze EMI in RF Circuits	More practical examples can be given
		CO6	2	1.35	Students were able to analyze EMC in RF Circuits	More practical examples can be given
VIII	**WN**	CO1	2	1.4	The student will be able to understand and classify wireless network, WBAN and their applications	More Animations on Applications shown to students
		CO2	2	1.4	The students will be able to get different types and their applications of wireless network.	Practical exposure of application is required
		CO3	2	1.4	Student found this module very interesting as it contains daily life technologies	Needs to improve writing skills
		CO4	2	1.35	Students learnt the planning and design concepts of WAN through different numerical examples	More assignments and practice is required for numerical examples as well as some real life examples will make numerical easy to understand.
		CO5	2	1.4	Students learn different types of adhoc network	Writing skills needs to improve
		CO6	2	1.4	Students got the overview of wireless sensor networks and IOT with real life examples.	More number of videos illustrating different application shown
VIII	**SCOM**	CO1	2	3	Students were able to understand and demonstrate basics of satellite communication and launching techniques	Set higher target level and more efforts will be taken to improve writing skills
		CO2	2	3	Students were able to provide in depth understanding of satellite operation and its space qualification.	Set higher target level and more efforts will be taken to improve writing skills

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VIVA Institute of Technology
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Department of Electronics and Telecommunication Engineering

		CO3	2	3	Students were able to provide in depth understanding of earth station technology.	Set higher target level and more efforts will be taken to improve writing skills
		CO4	2	3	Students were able to understand and analyze satellite link design	Set higher target level and more efforts will be taken to improve writing skills
		CO5	2	3	Students were able to analyze various methods of satellite access.	Set higher target level and more efforts will be taken to improve writing skills
		CO6	2	3	Students were able to understand various applications of satellite communication and future trends.	Set higher target level and more efforts will be taken to improve writing skills
VIII	**PM**	CO1	2	2.9	The student will be able apply selection criteria and select an appropriate project from different options.	More efforts required on Tutorials to improve writing skills.
		CO2	2	2.9	The student will be able to understand Project initiation process and documents required for it.	More efforts required on Tutorials to improve writing skills.
		CO3	2	2.9	The student will be able to write work break down structure for a project and develop a schedule based on it.	More efforts required on Tutorials to improve writing skills.
		CO4	2	2.9	The student will be able to identify opportunities and threats to the project and decide an approach to deal with them strategically.	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	2	2.9	The student will be able to use Earned value technique and determine & predict status of the project.	More efforts required on Tutorials to improve writing skills.
		CO6	2	2.9	Capture lessons learned during project phases and document them for future	More efforts required on Tutorials to improve writing skills.

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Department of Electronics and Telecommunication Engineering

					reference.	

References:
1. Course file 1 (Path: in the department)
2. Course Summary (path:\\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)

Activities undertaken for faculties and students

Sr.No.	Description	Resource Person	Date
1	Oscillations- Convergence: Project cum poster competition	-	31st March 2022
2	Working with Android Mobile Devices Using MATLAB & Simulink	Mr. Suraj Gavande Senior Application Engineer, DesignTech Systems Ltd	6th September 2021.
3	Latest Technologies in Industrial Automation	Mr. Asrar Khan, Sr. Instructor, Prolific Systems & Technologies Pvt Ltd	6th September 2021.
4	Design Deep Learning using MATLAB Live Script	Mr. Suraj Gavande, Senior Application Engineer, DesignTech Systems Ltd	30th August 2021.
5	Career Options and Opportunities for Electronics Engineers	Renjit C. V., Electrical Architect/Product Designer at Philips India LTD	21st August 2021
6	Self Development and Focused Learning	Ms. Rujuta Kambli, Founder and CEO, OptimisTech Software Solutions	20th August 2021.
7	What IT Industry Expect from Engineering Graduates	Mr. Rahul Jain, NIMAP INFOTECH	21st March 2022
8	The Art of Conceptual Understanding & Learning	Mr. Rajesh Jain, Process Precision Instruments	23rd March 2022
9	Engineering as a New Universal Language – A career Guide	Mr. Jay Jain, Process Precision Instruments	23rd March 2022
10	Virtual Industrial Visit to BSNL Exchange	Mr. Nitin Bavaskar	22nd Oct 2021
11	Virtual Industrial Visit to ALTOP	Mr. Aniket Kumbhar	1st April 2022

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	Industries		

- University of Mumbai approved STTP:

Sr.No.	Topic	Resource Person	Date
1.	One Week Short Term Training Program on "Hands-on Skill based Laboratories for EXTC Engineers"	Dr. Harshali Patil Prof. Manoj Kavedia Prof. Sagar Mhatre Prof. Nutan Malekar	2nd May 2022 to 7th May 2022

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Department of Electronics and Telecommunication Engineering

Academic Audit Report

2nd Jan 2023

Academic Audit for AY 2018-19, 2019-20, 2020-21, 2021-22 of Electronics & Telecommunication engineering department is conducted on 2nd January 2023 by external auditor.

It is based on code of conduct and actions taken in relation to continuous improvement.

Remarks by External Academic Auditor-

The following points were noted during the visit.

1. All files needs to be enclosed with summary sheet.
2. Last Audit report with actions taken need to maintained.
3. Reporting and action taken record need to be maintained by mentor. Make a case study of exceptional student case that shows facility/impact of mentorship by professional counselor.
4. Maintain the policy of BE projects and disseminate to student prior allocation of guides.
5. PO attainment record about BE projects need to maintained.
6. Need to update the record of students about higher studies.
7. Quality Research publications, IPR and consultancy projects need to be increased by faculties/students.

Department strength:

1. Teaching-learning records are maintained very well.
2. Self-learning of faculties through FDP/ NPTEL is appreciable.
3. Good student achievements.

Department weakness:

1. Collaborative Research publications and consultancy projects need to be increased by faculties/students.
2. Need to work towards faculty achievements.

02/01/2023
Dr. Sujata Kulkarni
Associate Professor, S.P.I.T, Mumbai

VIVA INSTITUTE OF TECHNOLOGY At: Shirgaon Post: Virar, Tal.: Vasai, Dist: Palghar VIRAR (EAST)

02.01.2023
Principal
VIVA Institute of Technology

Prof. Archana Ingle
HOD EXTC Dept, VIVA Institute of Technology

SRaut 02/01/23
Prof. Karishma Raut
NBA/NAAC Coordinator EXTC Dept, VIVA Institute of Technology

EXTERNAL AUDIT REPORT

Year (2021-2022):

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
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Department of Electronics and Telecommunication Engineering

Academic Audit Report

2nd Jan 2023

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02/01/2023

Dr. Sujata Kulkarni
Associate Professor, S.P.I.T, Mumbai

VIVA INSTITUTE OF TECHNOLOGY
At Shirgaon
Post Virar,
Tal.: Vasai,
Dist. Palghar
VIRAR (EAST)

02.01.2023

Principal
VIVA Institute of Technology

Prof. Archana Ingle
HOD EXTC Dept, VIVA Institute of Technology

02/01/23

Prof. Karishma Raut
NBA/NAAC Coordinator EXTC Dept, VIVA Institute of Technology

1) Madhura Ranade
2) Ashwini Hayar
3) Ratik Parsewar
4) Meena Perla
5) Nutan Malekar

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Approved by AICTE, New Delhi, DTE, Government of Maharashtra
and Affiliated to University of Mumbai

Ref. No. : VIVA / VIT / 3008 / 2022-23 Date : 02/01/20

Certificate of Appreciation

This is to certify that **Dr. Sujata Kulkarni**, Associate Professor, Electronics and Telecommunication Engineering Department, SPIT, Andheri(West) conducted academic audit on 2nd January 2023 of Department of Electronics and Telecommunication Engineering.

We are very much thankful to her for valuable suggestions for the growth of department and institute.

I hope similar support in future too.

Principal

INTERNAL AUDIT REPORT

Year (2018-2021):

Vishnu Waman Thakur Charitable Trust's
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Academic Audit Report

Name of the department: Electronics and Telecommunication Engineering

Audit for AY 2018-19, 2019-20 and 2020-21 **Date: 06/07/2022**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. All files and records are maintained properly.
3. Good number of bridge courses and internal quality improvement initiatives for students.
4. Activities under professional bodies are appreciable.
5. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
6. Faculties have completed NPTEL and ATAL courses. It must be continuous policy to upgrade.
7. Students must be encouraged for internship and certification courses.
8. IETE professional body is actively arranging workshops and project competitions in the department.
9. Activities must be done in collaboration with Industry (Active MoUs).
10. Activities taken for internal quality improvement is appreciable.
11. More efforts required for Alumni engagement.
12. Some awareness cum guidance programs can be arranged for HSC and diploma student to increase admissions.

Auditor Name & Signature

Prof. Niyati Raut (HOD Mech)

Prof. Karishma Raut (NAAC coordinator)

Principal

Dr. Arun Kumar

VIVA INSTITUTE OF TECHNOLOGY VIVA VIRAR

Vishnu Waman Thakur Charitable Trust's
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Academic Audit Report

Name of the department: Electronics and Tele-Communication Department

Audit for AY 2018-19, 2019-20 and 2020-21 **Date: 06/07/2022**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	70 to 80 %	All students with poor attendance have given written work for practice, question paper solving. During pandemic not required.
2	Coverage of syllabus	90-100 %	Records are maintained in the course file.
3	Student feedback	Faculty as well as facility feedback taken	Records are maintained.
4	Continuous Evaluation	• Monthly syllabus Completion • Semester wise and Subject wise Orientation • Mentors • Remedial Lectures • Fortnightly meeting	It is Suggested to maintain attendance record as well as report of orientation program. During pandemic mentoring is affected.
5	Quality of Unit test paper	• 70 to 80% Change • All CO's are covered • As per university pattern	Appropriately done. Pattern is updated during pandemic as per the guidelines given by UoM.
6	Analysis of University result 18-19: 77.58, 61.53, 89.04 : 61.53, 64.58, 100 19-20: 72, 100, 100 : 94, 100, 100 20-21: 100, 100, 100 : 100, 100, 100	Overall good Result. Records are maintained.	Need to improve SE result. Improvement in result is observed during pandemic due to objective type paper pattern.
7	Remedial classes	Remedial lectures are taken for • ATKT students	Records are maintained.

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		• UT result improvement	During pandemic not required
8	Seminars/ guest lecture	AY 2018-19 03 Seminars/ guest lecture AY 2019-20 09 Seminars/ guest lecture AY 2020-21 03 Seminars/ guest lecture	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
9	Industrial Visits	AY 2018-19 03 Industrial Visits AY 2019-20 02 Industrial Visits AY 2020-21 No Industrial Visits	
10	Workshops	AY 2018-19 01 Workshops AY 2019-20 01 Workshops AY 2020-21 No Workshop	
11	Student counseling	Mentor system is implemented with ratio of 1:20. Parent teachers meeting has been conducted annually.	Records are maintained. During pandemic mentoring is affected. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam.
12	Faculty Development Programs	AY 2018-19 01 STTP AY 2019-20 01 STTP AY 2020-21 No STTP	Records are maintained.
13	Infrastructure	Appropriate Infrastructure -3 classrooms -9 labs -3 Projectors	Proper maintenance is done on regular basis.
14	Self-Learning resources	Following Initiative has been taken by the department • Google Classroom • NPTEL Video lectures • Virtual lab • Department Library • You tube channel	Good efforts. Records are maintained.

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15	Student Participation	• Participation in NCRENB is compulsory for students • Good no. of prizes in other colleges	Student Achievements are appreciable.
16	Internal Quality Assurance	• Presentation • Aptitude lectures • Mini projects intercollege showcase • Value Added Courses • Flip class • Role play	Activities conducted in department are really appreciable.
17	Placement	AY 2018-19 20 Placements AY 2019-20 17 Placements AY 2020-21 28 Placements	More efforts required.
18	Student – Teacher Ratio	AY 2018-19 17.82 odd sem 16.86even sem AY 2019-20 16.59 odd sem 16.92even sem AY 2020-21 18.89 odd sem 17.34even sem	-
19	Unique features of Department	• Extc you-tube channel • Nirman Bridge course • Auto Rickshaw meter testing • Contribution to NCRENB • Aptitude test • I.V. for faculty.	Good Initiative
20	Newsletter/ Magazine	• VIVA-Converge annual magazine • Annual Newsletter	Records are maintained.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Niyati Raut (HOD Mechanicalw)

Prof. Karishma Raut (NAAC coordinator)

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2018-19

Academic Audit for AY 2018-19 Odd semesters carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1 Teaching & Learning Process

SEM	Subject	No. Of available hours	No. Of hours engaged	Short Fall	Corrective action	Innovation in teaching method
III	AM-III	51	47	4	Extra lectures taken	Use of Google Classroom to provide softcopy of reference books, notes, university question papers and practical write-ups. Videos are used for better understanding of related topics.
	EDC-1	53	52	01	Covered in assignment	Use of Google Classroom to provide softcopy of reference books, notes, university question papers and practical write-ups. Videos are used for better understanding of related topics.
	DSD	48	48	03	Extra lectures taken on Saturday.	Use of video lectures for better understanding.
	CTN	49	49	-	-	Use of Google Classroom for reference real world examples to understand concepts.
	EIC	52	50	02	Adjusted in stipulated time	Use of google classroom for softcopy and also some video lectures
V	MPI	45	46	-	-	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding, online quiz
	DC	48	48	04	Extra lectures taken on 4/8/18, 24/8/18, 16/10/18	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding.
	EE	47	49	-		Used Google classroom.
	DTSP	50	47	3		Use of Google Classroom to provide softcopy of reference books. PPTs and videos are

						used for better understanding of related topics.
	TV	51	49	2	Topics covered during practical session and notes given	Better understanding of concepts with real life examples of probability.
	DCE	49	48	1	Topics were covered using PPT and assignments	Use of Google Classroom to provide softcopy of reference books. PPTs and videos are used for better understanding of related topics.
VII	IVP	51	51	-		Reference books and notes shared on Google Classroom. Use of Animation videos to provide better understanding of concepts of image and video.
	MC	46	46	-	-	Use of Google Classroom to provide reference books and notes. PPTs, NPTEL videos and virtual lab for better understanding of related topics.
	OCN	46	30	16		Use of Google Classroom to provide softcopy of reference books. PPTs and videos are used for better understanding of related topics
	MRE	47	46	1	Covered syllabus topic using PPT and assignment questions	Google classroom was used to provide notes and books to students. Numerical on radars were taken as practice.
	DCE	47	50	-	-	Used PPT to demonstrate image and video compression, concepts of biometric and also provided reference notes on Google classroom. Animated videos are used for better understanding.

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
III	EDC-1	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	Few CROs and Power Supplies not working; need to be repaired or ordered
	DSD	6 Digital Trainer Kit. Computer lab with 20 PCs with VHDL software	6 Digital Trainer Kit. Computer lab with 10 PCs with VHDL software	Digital Trainer Kit need maintenance
	OOP	Pcs and java development kit application	Pcs and java development kit application	NONE
V	MPI	Computer lab with 20 PCs & Tasam	Computer lab with 20 PCs & Tasam	
	DC	Modulation Trainer kit.	Modulation Trainer kit.	Few Modulation Trainer kit not working; need to be repaired or ordered.
	BCE	Computer lab with 20 PCs	Computer lab with 20 PCs	
	DCE	Computer lab with 20 PCs and Matlab/scilab	Computer lab with 20 PCs and Matlab/scilab	
	TV	Colour TV and LED TV trainer kit	Colour TV and LED TV trainer kit	
	OSTCL	EAGLE software,PCB,etching machine,etching solution,PCs	EAGLE software,PCB,etching machine,etching solution,PCs	--
VII	IVPL	Computer lab with 20 PCs and Matlab/scilab	Computer lab with 20 PCs and Matlab/scilab	
	ACEL-I (MC)	Computer lab with 20 PCs and Matlab	Computer lab with 20 PCs and Matlab	-
	ACEL-II (OCN, MRE)	Optical fiber trainer kits and Software for optical network	Optical fiber trainer kits	Software for optical networks is required.
		Microwave Test Bench.	Microwave Test Bench.	-
	DCEL	Computer lab with 20 PCs and Matlab/scilab	Computer lab with 28 PCs and scilab.	

Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
III	AM-III	CO1	2	1.2	Able to understand Laplace transform I Standard function and analyses methods, and application.	Taking more examples depend on all terms in Laplace transform
		CO2	2	1.2	Able to understand inverse Laplace transform II and application.	Taking more examples depend on all terms in inverse Laplace transform
		CO3	3	1.2	Students were Able to determination of Fourier coefficient, expansion of Fourier series depend on different intervals, analyse complex form of Fourier series on integrals and Fourier transform	Real world examples related to Fourier series and Fourier transform
		CO4	2	1.3	Ability to understand and analyse vector algebra, vector differential and integration.	Implemented by taking application of vectors in algebra, differential
		CO5	2.5	1.3	Ability to understand and analyse vector integration.	Implemented by taking application of vectors in integration.
		CO6	2.25	1.25	Student will able to understand Ability to understand vector algebra and analyze the analytic function ,mapping in complex variable and able to understand Bessel's function	Taking more examples depend on this
III	EDC-I	CO1	2	1.4	Students are able to understand various types of passive component and physical operation of diode	Student must be motivated to improve writing skills.
		CO2	2	1.35	Students are able to analyze, design rectifiers, filters and zener voltage regulator	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	1.4	Students are able to understand dc modeling, analyze and design of BJT,FET circuits	Laboratory exercises need to conduct for understanding. More numerical practice needed
		CO4	2	1.35	Students are able to understand	More numerical practice

					small signal model and analysis of BJT,FET amplifier.	needed for different configurations.
		CO5	2	1.4	Students are able to determine frequency response of BJT & FET amplifier	Laboratory exercises need to conduct for understanding. More numerical practice needed.
		CO6	2	1.3	Students are able to design single stage RC coupled CE and CS amplifier.	More numerical practice can be taken through tutorials.
III	DSD	CO1	2	2.9	Target Level is achieved.	Set higher target level.
		CO2	3	2.85	Target not achieved.	More problems on combinational logic circuits can be added.
		CO3	1	2.9	Target Level is achieved.	Set higher target level.
		CO4	3	2.9	Target not achieved.	More problems on Sequential logic circuits can be added.
		CO5	2	2.9	Target Level is achieved.	Set higher target level.
		CO6	1	2.9	Target achieved.	More programs on VHDL can be added.
III	CTN	CO1	3	1.37	Students are able to analyze DC and AC circuits	More examples required
		CO2	2	1.37	Students are able to understand network topologies and graph theory for analyzing circuits	More examples required
		CO3	2	1.40	Students are able to evaluate time and frequency domain responses of RL,RC,RLC circuits	More examples required
		CO4	2	1.40	Students are able to understanddriving point and transfer functions and stability of circuits	More examples required
		CO5	2	1.37	Students are able to understandtwo port networks and different parameters used for analysis	More practice required
		CO6	2	1.37	Students are able to synthesis RLC circuits	More practice required
III	EIC	CO1	2.33	1.33	Students were able to understand basics. The definitions were a bit tough to memorize	Real life examples like mega ohm bridge and a situation of measurement was given.

		CO2	2	1.33	The working of transducers was very simple though practical is missing	Some selected transducers were shown to students to explain working
		CO3	2	1.33	Telemetry and data acquisition system have block diagram which were tough to memorize.	The real world examples were discussed to bring more awareness of process.
		CO4	2.5	1.33	The block diagram reduction critical rules were a bit tough to understand	Diagramatic way of drawing helped them to understand the rules
		CO5	2.5	1.27	Time domain analysis was simple but root locus was a bit tricky for students.	A way of remembering steps of root locus was made and explained
		CO6	2.5	1.30	Frequency domain analysis was very lengthy.	The methods were explained with video lectures
V	MPI	CO1	2	1.4	Students were able to understand basic concepts of microcomputer system	Need more live examples.
		CO2	2	1.4	Students were able to able to draw and describe architecture of 8086 microprocessor	Need of Case studies for practice.
		CO3	2	1.3	Students were able to understand instructions and addressing modes of 8086	More practice is required to improve programming skills.
		CO4	2	1.3	Students were able to interface 8086 with different peripherals.	Need to take more interfacing problems.
		CO5	2	1.3	Students were able to interface ADC & DAC with 8086	Need to take real time applications.
		CO6	2	1.4	Students were able to understand math processor/co-processor 8087 and its interfacing with 8086.	Practical approach to be implemented.
V	DC	CO1	2	1.3	Target level not achieved.	More numerical examples would be added in the class.
		CO2	3	1.35	Target level not achieved.	Different real world examples can be added to make students understand and apply the concepts.
		CO3	2	1.4	Target level not achieved.	More efforts would be taken on numerical examples.
		CO4	1	1.35	Target level achieved.	Set higher target level.
		CO5	2	1.3	Target level not achieved.	Different real world examples can be added.
		CO6	2.5	1.2	Target level not achieved.	More efforts would be taken on numerical examples.
V	EE	CO1	2	1.33	Students were able to learn basics of electrostatics and different laws, theorem	More practice is required to solve numerical
		CO2	2	1.27	Students were able to able understand and apply the equations of electric field, capacitance, and boundary	More practice is required to solve numerical

					conditions	
		CO3	2	1.27	Students were able to learn different laws of magnetic field with its applications and boundary conditions	More practice is required to solve numerical
		CO4	2	1.27	Students were able understand the Maxwell's equation & electromagnetic wave propagation.	More practice is required to solve numerical
		CO5	2	1.33	Students were able to learn different transmission line parameters and equations.	More practice is required to solve numerical
		CO6	2	1.33	Students were able to learn different applications of electromagnetic	Live examples can be given to understand the concepts
V	DTSP	CO1	2	1.15	Students were able to understand DFT and FFT algorithms	Need to take more numerical.
		CO2	2	1.15	Students were able to solve numerical on IIR filter design	Need to take more numerical
		CO3	2	1.2	Students were able to solve numerical on FIR filter design	More practice is required to improve understanding of numerical.
		CO4	2	1.25	Students were able to understand finite length effects on digital filters	Need to relate with real world scenario.
		CO5	2	1.1	Students were able to understand various DSP processors & their architecture.	Need to take real time applications.
		CO6	2	1.1	Students were able to understand real world application of DSP.	Need to relate with real world applications.
V	TV & Video	CO1	2	1.2	Students are able to understand basics of picture transmission and reception, TV signal processing and different camera tubes	More practice can be taken and need to improve writing skills.
		CO2	2	1.2	Students are able to understand basics of colour TV and different colour TV systems	More practice can be taken and set higher target level.
		CO3	1	1.2	Students are able to understand the need of compression and different video compression techniques. They also understand the digital video parameters.	Student must be motivated to improve writing skills and set higher target level
		CO4	1	1.2	Students understood the working of satellite Television and different standards.	More practice can be taken and set higher target level
		CO5	2	1.3	Students understood the evaluation of television systems with time and the difference between different systems	More practice can be taken and need to improve writing skills.
		CO6	2	1.3	Students are able to understand	Scope of all these topics can

					principle and working of different displays used in TV.	be increased for better understanding and need to improve writing skills.
V	DCE	CO1	2	2.1	Students are able to understand need of data compression and implement different text compression techniques. But need to improve writing skills. More practice is required	Student must be motivated to practice methods and improve writing skills YouTube and NPTEL Videos is one of the best (formal and informal) learning platforms on the internet.
		CO2	2	2.05	Students are able to interpret different images and apply operations to compress them. More practice is required	We can introduce them about latest image processing methods and need to improve writing skills.
		CO3	2	1.95	Students are able to understand audio and video compression.	Student must be motivated to improve writing skills
		CO4	2	2.1	Students are able to understand modular arithmetic and implement symmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills.
		CO5	2	2.05	Students are able to understand number theory and implement asymmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills.
		CO6	2	1.9	Students are able to understand network security	Scope of all these topics can be increased for better understanding and need to improve writing skills.
VII	Image and Video Processing	CO1	**3**	**1.3**	Students are able to understand the fundamentals and need of image processing and are able to convert images in different color models.	Students need to be able to put their understanding of fundamentals in more specific words. Classwork and Oral are taken during practical sessions.
		CO2	**3**	**1.25**	Students are able to understand the need of image transforms and are able to choose and perform transform for suitable application. However, students need to perform mathematical operations faster.	Need more practice to solve transforms mathematically correct.
		CO3	**2**	**1.35**	Students are able to understand different image processing techniques in Spatial and frequency domain. They are able to perform image processing techniques related to histogram.	More practice needs to be taken.
		CO4	**3**	**1.4**	Students are able to understand the need of segmentation and perform	More practice needed to correctly apply the

					different types of segmentation techniques and transforms. Students need to perform morphological techniques mathematically correct on binary images.	transforms.
		CO5	**2**	**1.4**	Students are able to understand the difference between image restoration and image enhancement. They need more practice to perform image restoration using different models and filters.	More practice needs to be taken.
		CO6	**3**	**1.4**	Students are able to understand the fundamentals of video acquisition, formats and video signal processing. Students need better usage of technical language while writing answers.	Students need to be able to put their understanding of fundamentals in more specific and correct words. Classwork and Oral are taken during practical sessions.
		CO7	**2**	**1.4**	Students are able to understand fundamentals of motion estimation along with different algorithms.	More applications must be introduced to provide better understanding.
VII	**Mobile Communication**	CO1	1.67	1.26	Students are able to understand the concept of Mobile radio propagation, cellular system design. But need to improve in writing skills.	Must be guided for proper representation and content for improvement in writing skills
		CO2	3	1.26	Students are able to understand GSM, CDMA concepts and architecture, frame structure, system capacity, services provided.	Must be motivated for reading reference books and clear the concept
		CO3	2	1.2	Students are able to understand evolution of mobile communication generations 2G, 2.5G, 3G with their characteristics and limitations.	Must be motivated for reading reference books and clear the concept
		CO4	2.5	1.3	Students are able to understand network structure of 3 GPP in detail.	Must be guided for proper representation and content for improvement in writing skills
		CO5	2.33	1.3	Students are able to understand emerging technologies required for fourth generation mobile systems such as SDR, MIMO etc.	Must be guided for proper representation and content for improvement in writing skills
		CO6	2.75	1.16	Students are able to understand different indoor and outdoor propagation models related to losses and different types of fading.	Must be motivated for solving problems from different reference books.
VII	**Optical Commun**	CO1	2	1.25	Students will be able to understand the fundamentals principles of	Real time examples,applications and

	ication and Networks				optics and light wave to design optical fiber communication Systems	detailed study with practice is required
		CO2	2	1.30	Students will be able to understand light sources, couplers, detectors, and multiplexers.	Detailed study with practice is required
		CO3	2	1.13	Students will be able to understand light sources, couplers, detectors, and multiplexers.	Live examples and more practical knowledge is required.
		CO4	2	1.28	Students will be able to understand design optical fiber communication links using appropriate optical fibers.	Understanding of optical link and optical components in optical networks is needed
		CO5	2	1.28	Students will be able to understand concepts of designing and operating principles of modern optical communication systems and networks.	Application of network with deep understanding is required
		CO6	2	1.21	Students will be able to understand & apply the knowledge developed in-class to contemporary optical fiber communication research and industrial areas.	More applicatiocns and there use needed to apply in real time.
VII	**Microwave and Radar Engineering**	CO1	2	1.05	Students will be able to analyze microwave passive circuits & components.	Students needs to improve their writing skills
		CO2	2	1	Students will be able to design the tunning & matching networks for industrial & scientific purposes.	More practice is needed
		CO3	2	1.2	Students will be able to identify the state of art in microwave tubes.	we can explain working of different tubes with the help of different simulations
		CO4	2	1.2	Students are able to understand the different semiconductor microwave devices and its performance characteristics.	Module wise tutorials can be introduced
		CO5	2	1	Students will are to understand the basics of Radar including different types, radar displays and clutters	Writing skills needs to be improved
		CO6	2	1	Students are able to understand the applications of microwave in area like bio-medical and remote sensing radar used in navigational aids	Needs to improve the writing
VII	**Data Compression and Encrypti**	CO1	**2**	2.9	Students are able to understand need of data compression and implement different text compression techniques. But need	Student must be motivated to practice methods and improve writing skills and set

	on				to improve writing skills. More practice is required	higher target level
		CO2	2	2.7	Students are able to understand audio compression.	Student must be motivated to improve writing skills and set higher target level
		CO3	2	2.85	Students are able to interpret different images and apply operations to compress them. More practice is required	We can introduce them about latest image and video processing methods and need to improve writing skills and set higher target level
		CO4	2	2.85	Students are able to understand modular arithmetic and implement symmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills and set higher target level
		CO5	2	2.9	Students are able to understand number theory and implement asymmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills and set higher target level
		CO6	2	2.7	Students are able to understand network security and ethical hacking	Scope of all these topics can be increased for better understanding and need to improve writing skills and set higher target level

References:

1. Course file I (Path: in the department)
2. Course Summary (path: \\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)
3. Attainment level and result analysis

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2018-19

Academic Audit for AY 2018-19 **even** semester is carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1(b): Teaching & Learning

SEM	Subject	No. Of available hours	No. Of hours engaged	Shortfall	Corrective action	Innovation in teaching method
IV	AM-IV	46	45	01	Extra lecture taken	Use of Google Classroom
	EDC-II	45	44	01	Covered during practical session	Use of Google Classroom to provide softcopy of reference books, notes, university question papers and practical write-ups. Videos are used for better understanding of related topics.
	LIC	45	46	-	-	PowerPoint presentations and use of video lectures.
	SS	48	49	-	-	Use of Google classroom. Virtual Lab experiments conducted. More practice is given during tutorials and Group-wise PowerPoint presentations conducted.
	PCE	24+21	24+22	-	-	Use of Google classroom, PowerPoint presentations.
VI	MA	40	39	01	Topic covered during practical session & notes given	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding
	CCN	42	41	1	Covered the syllabus topic using PPT and assignments.	Google classroom was used for giving assignments and other material. Online quiz was also taken using google quiz.

	ARWP	43	43	-	-	Use of Google classroom PowerPoint presentations.
	IPMV	40	41	0	0	Use of Google classroom, PowerPoint presentations, Videos are used for better understanding of related topics..
	DBMS	41	39	2	Extra lectures planned	More numerical and class work was done for practice. Video lectures were used for better understanding.
VIII	**SCN**	47	47	-	-	Animation explaining the orbital movements of satellite are used for better understanding.
	WN	47	37	10	Faculty on maternity leave	Assignments and class test were conducted for practice and understanding the topics.
	TNM	24+23	24+22	01	Extra lectures planned	Use of Google classroom,video and animations for better explaination.
	IVC	47	47			Animated Videos are used for important topic for better understanding Flip class and Role play is used to improve understanding

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
IV	**EDCL-II**	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	Few CROs and Power Supplies not working; need to be repaired or ordered
	LICL	Multimeter, CRO ,IC 741	CRO and multimeter	Quality 741 IC is required.
	PCEL	Communication kits	Communication kits and CRO	Communication kits and CRO

VI	MA	Computer Lab with 20 PCs. Keil µVision 4 and Keil µVision 5 Software, 8051 trainer kit with peripheral interfacing cards	Computer Lab with 20 PCs. Keil µVision 4 and Keil µVision 5 Software, 8051 trainer kit with peripheral interfacing cards	-
	CCN	RJ45 Socket, Cat 5 Cable, Crimping Tool	Computer lab with 20 PCs and software(packet tracer and NS2)	-
	ARWP	IE3D, Antenna trainer kit, CRO,	IE3D, Antenna trainer kit, CRO,	-
	IPMV	Computer lab with 20 PCs with MATLAB	Computer lab with 20 PCs with MATLAB	MATLAB license renewal in process
	DBMS	MSSQL	MSSQL	-
VIII	SCNL	Computer lab with 20 PCs with MATLAB, 4 Satellite communication Trainer kit.	Computer lab with 20 PCs, 4 Satellite communication Trainer kit.	MATLAB license renewal in process
	WNL	Computer lab with 20 PCs with NS2.	Computer lab with 20 PCs with NS2.	RFID, Bluetooth modules are required.
	TNML	Computer lab with 20 PCs with NS2.	Computer lab with 20 PCs with NS2.	
	IVCL	Computer lab with 20 PCs and packet tracer, virtual box,opencv-python, cisco router, cisco switches, cisco IP phone, RGB camera	Computer lab with 20 PCs and packet tracer, virtual box,opencv-python, cisco router, cisco switches, cisco IP phone, RGB camera	One more IP phone is required

Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
IV	AM-IV	CO1	3	2.1	demonstrate basic knowledge of Calculusof variation in Euler Langrange equation, Functions involving higher order derivatives : Rayleigh-Ritz method	Taking more examples depend on all terms in variation
		CO2	3	2.05	Able develope Vectors in n-dimensional vector space, Metric spaces , Norms and normed vector spaces, Inner products and innerproduct spaces,The Cauchy-Schwarz	Able develope Vectors in n-dimensional vector space, Metric spaces , Norms and normed vector spaces, Inner products and

					inequality, orthogonal Subspaces, Gram-Schmidt process.	innerproduct spaces, The Cauchy-Schwarz inequality, orthogonal Subspaces, Gram-Schmidt process.
		CO3	3	2.1	Able to understand matrix theory Characteristic equation, Eigenvalues and Eigenvectors , Cayley-Hamilton theorem , Diagonalisation , derogatory and non-derogatory matrices	Taking more examples depend on this.
		CO4	3	2.1	Ablity tounderstand the Random variable , and able to find the probability distribution.	Ablity to understand the Random variable , and able to find the probability distribution.
		CO5	3	2	Ablity to understand the concept of correlation and regression . Demonstrate an ability to identify problems in the field of Electronics and Telecommunication and solve it.	Implemented by taking application of complex integration.
		CO6	2.5	2.05	Ablity to learn Complex Integration , Taylor's and Laurent's series , singularities, poles Residue theorem of f(z) and Applications of Residue theorem to evaluate real Integrals of different types.	Implemented by taking application of complex integration.
IV	EDC-II	CO1	2	2.2	Students are able to understand basic operation of MOSFET and its design.	Student must be motivated to improve writing skills.
		CO2	2	2.1	Students are able to understand the operation of multistage amplifier using BJT and FET in various	More numerical practice can be taken through tutorials. Video lectures

					configuration. Also able to determine frequency response and voltage gain	
		CO3	2	2	Students are able design multistage amplifier for a given specifications.	More numerical practice needed.
		CO4	2	2.2		More numerical practice needed for different configurations.
		CO5	2	2.2	Students are able to understand concept of feedback amplifier and their characteristics.	Laboratory exercises need to conduct for understanding. More numerical practice needed.
		CO6	2	2.2	Students are able to design the different oscillator circuits for various frequencies.	More numerical practice can be taken through tutorials.
IV	LIC	CO1	2.66	1.35	Students were finding difficulty in understanding basics of op-amp	Working of transistor was being revised
		CO2	2.66	1.4	The initial applications of opamp was easy and students understood	Practical sessions was involved to bring more depth in concepts
		CO3	2.66	1.4	Non linear applications of Opamp was a little tough for students	The working of opamp as comparator and analyzing it instant by instant helped them to get output graph
		CO4	2.66	1.35	The A to D converters was a bit tough to understand for students	Opamp as comparator working helped them to understand the
		CO5	2.66	1.4	Timer IC operation was a bit difficult for students to understand	The pin configuration was given special pointer tags to remember and hence its working
		CO6	2.66	1.4	Regulator IC designing was tough for some students	The working of regulator IC was demonstrated with the help of practical.

IV	SS	CO1	1.4	0.54	Students are lagging in finding easiest method of solution for university exam questions.	More practice need to be taken to clear the concept.
		CO2	2	0.54	Students are lagging in finding easiest method of solution for university exam questions.	Test Tutorials can be taken.
		CO3	2.8	0.57	Students are lagging in finding easiest method of solution for university exam questions.	Test Tutorials can be taken.
		CO4	2.8	0.56	Students are lagging in finding easiest method of solution for university exam questions.	More practice need to be taken to clear the concept.
		CO5	2.8	0.45	Students are lagging in finding easiest method of solution for university exam questions.	More practice need to be taken to clear the concept.
		CO6	2.8	0.56	Students are lagging in finding easiest method of solution for university exam questions.	Need more guidance to improve writing skills
IV	PCE	CO1	2	1.3	Students were able to understand different noises in communication system and basics of analog communication.	Practical & tutorial were conducted on this topic.
		CO2	2	1.25	Students got the knowledge of AM modulation technique	Numericals given for practice
		CO3	2	1.2	Student got the knowledge of angle modulation technique	Practicals and tutorials were taken on this topic.
		CO4	2	1.3	Students were able to describe sampling technique and use it in modulation process	They have used the sampling process in digital modulation technique.
		CO5	2	1.3	Students were able to draw and explain analog pulse modulation technique.	Practically made them understand Analog pulse modulation technique.
		CO6	2	1.3	Students were able to explain digital modulation technique.	Tutorial and practical were conducted on this topic.

Department of Electronics and Telecommunication Engineering

VI	MA	CO1	2	2.16	Students were able to able to draw and describe architecture of 8051 microcontroller.	Set higher target level.
		CO2	2	2.2	Students were able to write assembly language program for 8051 microcontroller.	Set higher target level.
		CO3	2	2.2	Student got the knowledge about interfacing various peripheral devices to the 8051 microcontroller.	Set higher target level.
		CO4	2	2.1	Students were able to draw and describe architecture of ARM7 microcontroller.	Set higher target level.
		CO5	2	2.2	Students were able to write assembly language program for ARM7 microcontroller.	Set higher target level.
		CO6	2	2.1	Students were able to write embedded C program for ARM7 microcontroller.	Set higher target level.
VI	CCN	CO1	2.25	1.28	Students are able to understand the standards and protocol for computer communication	Set higher target
		CO2	2.25	1.28	Students are able to design small computer network using physical topology	Set higher target, and conduct practical session for better understanding
		CO3	3	1.28	Students are able to understand the data link layer protocol	Practical knowledge should be made available by site visit
		CO4	2	1.28	The student are able to troubleshoot connectivity problems in a host occurring at multiple layers of OSI model	Set higher target, extra lecture and doubt clearing session will be organize
		CO5	3	1.28	The student are able to perform basic configurations on routers and Ethernet communications	Actual router implementation concept should be clear
		CO6	2.25	1.28	The student are able to implement LAN using static and dynamic addressing techniques including subnetting.	Set higher target
VI	ARWP	CO1	2	1.35	Students will be able to understand fundamentals parameters and radiation mechanism of antenna.	More examples can be used for understanding
		CO2	2	1.2	Students will be able to learn linear wire antenna, loop antenna and helical antenna	More examples can be used for understanding
		CO3	2	1.3	Students will be able to understand and design array	More practice of writing the answers

						must be taken, through classwork or tutorials.
		CO4	2	1.4	Students will be able to understand special type of antennas such as horn and reflectors	More examples can be used for understanding
		CO5	2	1.2	Students will be able to understand MSA and designing	More numerical examples are required
		CO6	2	1.2	Students will be able to learn antenna measurements and radio wave propagation	More practice of writing the answers must be taken, through classwork or tutorials.
VI	IPMV	CO1	2	1.4	Target not achieved.	Case study on image acquisition techniques can be given.
		CO2	1.5	1.3	Target not achieved.	More problems taken on image transforms
		CO3	2	1.4	Target not achieved.	Image enhancement techniques presentations given.
		CO4	2.5	1.3	Target not achieved.	Image Segmentation problems added.
		CO5	2	1.25	Target not achieved.	Applications of machine vision explained with real world examples.
		CO6	2	1.4	Target not achieved.	Case study on machine vision is given.
VI	DBMS	CO1	2	1.35	Students understood the evolution of database very well	Theory was explained using video lectures
		CO2	2	1.3	The entire architecture of database was very well explained	Diagram and figures were more elaborately explained
		CO3	3	1.4	ER diagram being a wonderful tool towards analysis of database	Diagram was explained with different case studies

					design	and practices
		CO4	3	1.35	Relational algebra and calculus though interesting but students found it difficult	Relational algebra and calculus was explained with more examples
		CO5	3	1.4	The constraints and views were difficult for students	The constraints and views were difficult for students
		CO6	2	1.4	Students found that transaction management was a very important aspect in today's growing technology	Roleplay was being conducted to explain transaction management
VIII	SCN	CO1	2	3	Students are able to understand fundamentals of orbital mechanics, launch methods, applications of satellite communication in daily life and to identify the characteristics of orbits & types of orbits.	Set Higher Target.
		CO2	2	2.9	Students are able to understand various techniques of controlling the orientation of satellite, understanding of parameter exchange between satellite and earth station and equipment's carried by satellite.	Set Higher Target.
		CO3	3	2.95	Students are able to make a link power budget depending on losses in space and gains of receiver-transmitter antennas. They will be able to modify received power equation depending on parameters that effect uplink or downlink.	Need more practice to solve link power budget mathematically correct.
		CO4	2	3	Students are able to determine and explain the design considerations of earth station. They will have understanding of types of earth stations and their	Set Higher Target.

					applications.	
		CO5	2	3	Students are able to explain methods of accessing the space segment along with their types. They will be able to calculate frame efficiency of a TDMA frame and will gain understanding of principles on which all the accessing methods work.	Set Higher Target.
		CO6	2	3	Students are able to relate the networking principles for satellite communication through reference models and will be able to understand the types of connectivity between satellite networks along with use of optical technology for satellite communication.	Set Higher Target.
VIII	WN	CO1	2	2.1	Students learnt the evolution of technologies from 1G to LTE	Live examples are required for better understanding. Set higher target level.
		CO2	2	2.1	Students learnt the planning and design concepts of WAN through different numerical examples.	More assignments and practice is required for numerical examples.
		CO3	2	2.13	Student found this module very interesting as it contains daily life technologies.	Video and demo lectures are required for technologies included in this module. And set higher target level.
		CO4	2	2.1	Students got the overview of wireless sensor networks but found it difficult to understand.	Video lectures are required for better understanding of WSN and its applications and set higher target level.
		CO5	2.33	2.1	Students understood the middleware principles, architecture and network management.	A practical approach is required.
	TNM	CO1	2	1.2	The students were able to	Practical

VIII					focus on Basics of Telecomm Networks	Demonstration is required
		CO2	2	1.05	The student were be able to understand OSI model standards	Practical Demonstration is required
		CO3	2	1.15	The student will be able to name and understand services offered by SNMP protocols	Practical Demonstration is required
		CO4	2	1.2	The student will be able to understand ATM and other services	Practical Demonstration and practice is required
		CO5	2	1.2	The student will be able to understand Application of TNM	Practical Demonstration is required
		CO6	2	1.2	The student will be able to understand TNM architecture in detail.	Practical Demonstration is required
VIII	IVC	CO1	2	2.2	The students were able to focus on Internet protocol standards and services.	More efforts required on Tutorials to improve writing skills.
		CO2	2	2.15	The student were be able to understand working of global internet including client server operating system and application layer protocols	More efforts required on Tutorials to improve writing skills.
		CO3	2	2.2	The student will be able to name and understand services offered by TCP and UDP.	More efforts required on Tutorials to improve writing skills.
		CO4	2	2.1	The student will be able to implement LAN using static and dynamic addressing techniques including subnetting.	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	2	2.1	The student will be able to understand the methods of digitizing and compressing audio and video	More efforts required on Tutorials to improve writing skills.
		CO6	2	2.2	The student will be able to understand how internet can be used as telephone network and to implement VoIP.	More efforts required on Tutorials to improve writing skills.

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References:
1. Course file I (Path: in the department)
2. Course Summary (path:\\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)

Activities undertaken for faculties and students

Sr.No.	Description	Resource Person	Date
1	Oscillations 2019 - CONVERGENCE	-	28th March 2019
2	5days Arduino Bridge Course	Prof. Nutan Malekar	
3	PCB Design	Prof. Nutan Malekar	
4	Guest Lecture on Realtime Web Application	Mr. Sumukh Barve, Founder & CEO at Polydojo.com	3rd August 2018.
5	Online Information Sources for Quality Research Writing	Ms. Devashree Ugvekar, Librarian at VIVA Institute of Technolog	11th January 2019
6	Career Guidance & Job Opportunity	Ms. Gauri Bodkhe, Cloud Support Associate at Amazon Web services	14th January 2019
7	Computer Communication Network	Mr. Annirudha Bodkhe, Ethical Hacker	11th February 2019
8	Database Management System	Mr. Suman Yemula, Senior Manager at Kotak Mahindra Prime	15th February 2019
9	Goal Setting & Accomplishment	Mr. Irudaya Malar, Trainer, Success Coach	15th February 2019
10	Real world & Trending Digital Networking Technology	Ms. Yogita Sharma, Lead Network Administrator at Wipro Technologies.	22nd March 2019
11	IETE Approved Two Day Workshop On "Ethical Hacking and Cyber Security"	Mr. Aditya Mathur Director Cyber Security of SIDR Solutions and Technologies PVT LTD	10th & 11th September, 2018
12	1 Day Workshop On	Mr. Varun Poladia,	15th February, 2019

	"INTRODUCTION TO ARDUINO PROGRAMMING"	CEO and co-founder of EduTronics	
13	Industrial Visit to Tarapur Atomic Power Station		16th October 2018
14	Industrial Visit to Amul Dairy Plant		16th October 2018
15	Industrial Visit to Centre for Development of Advanced Computing (CDAC)		7th March 2019
16	Industrial Visit to I- Medita, Pune		7th March 2019

- ISTE/IETE approved STTP:

Sr.No.	Topic	Resource Person	Date
1.	AICTE-ISTE Approved One Week Short Term Training Program on "Research methodology with Management techniques And tools in research"	Dr. Uday Pandit, Professor, SFIT Mrs. Arti Karande, Professor, SPIT Ms. Devashree Ugvekar	2nd January to 7th January 2019.

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Academic Audit Report
AY 2019-20

Academic Audit for AY 2019-20 Odd semesters carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1 Teaching & Learning Process

SEM	Subject	No. Of available hours	No. Of hours engaged	Short fall	Corrective action	Innovation in teaching method
III	EM-III	49	49	-	-	-
	EDC-I	49	48	1		Use of Google Classroom to provide softcopy of reference books, notes, university question papers and practical write-ups. Videos are used for better understanding of related topics.
	DSD	45	49	-	-	Use of Quizlet app for checking student understanding
	EIC	47	46	1	Adjusted in stipulated time	Use of google classroom and presentation
	CTN	49	47	2	Adjusted in stipulated time	Use of Google Classroom for reference real world examples to understand concepts.
V	DC	42	43	-	-	Use of QR codes for giving Viva questions.
	DCE	45	41	4	Part of syllabus was covered in practical session	Google classroom for sharing notes and videos was used , Quiz to clear theoretical concept was conducted
	MPI	45	41	4	Topic covered during practical sessions & notes given	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding, online quiz
	BCE	14	14			-
	DTSP	49	44	5	PPTs and videos are used for coverage of syllabus	Use of Google Classroom to provide softcopy of reference books. PPTs and videos are used for better understanding of related topics.
	EE	45	44	1	Adjusted in stipulated time	Google classroom for sharing notes and videos was used ,

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						Quiz to clear theoretical concept was conducted
VII	ME	41	40	1	Adjusted in stipulated time	Google classroom for sharing notes and videos was used , Quiz to clear theoretical concept was conducted
	MCS	40	42	-	"	"
	OC	46	45	1	Part of syllabus was covered in practical session	Google classroom for sharing notes and videos was used , Quiz to clear theoretical concept was conducted
	ICE	41	43	-	"	PPTs and demo with developed videos, NPTEL videos are shown and discussed.
	MIS	30	31	-		"

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Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
III	EDC-1	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	-
	DSD	6 Digital Trainer Kit.	6 Digital Trainer Kit.	6 Digital Trainer Kit.
	EIC	Bridges and lvdt kit	Bridges and lvdt kit	-
	OOPM	JDK	JDK	-
V	DC	Modulation Trainer kit.	Modulation Trainer kit.	Few Modulation Trainer kit not working; need to be repaired or ordered.
	DCE	20 PC's with MATLAB/SCILAB	20 PC's with MATLAB/SCILAB	--
	MPI	Computer lab with 20 PCs & Tasam	Computer lab with 20 PCs & Tasam	-
	DTSP	20 PC's with MATLAB/SCILAB	20 PC's with MATLAB/SCILAB	-
	OSTCL	EAGLE software,PCB,etching machine,etching solution,PCs	EAGLE software,PCB,etching machine,etching solution,PCs	-
VII	ME	Microwave test bench and Scilab	Microwave test bench and Scilab	-
	MCS	20 PC's with MATLAB/SCILAB	20 PC's with MATLAB/SCILAB	-
	OC	Optical Trainer Kit, Optisim software	Optical Trainer Kit	Open source S/F is used wherever possible
	ICE	Cisco packet tracer and MATLAB, Python, VOIP, CISCO switch and router	Cisco packet tracer and MATLAB, Python, VOIP, CISCO switch and router	Students are allowed to use any coding language as per their proficiency.

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Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
III	EM-III	CO1	2	1.3	Able to understand Laplace transform I Standard function and analyses methods, and application.	Taking more examples depend on all terms in Laplace transform
		CO2	2	1.3	Able to understand inverse Laplace transform II and application.	Taking more examples depend on all terms in inverse Laplace transform
		CO3	3	1.3	Students were Able to determination of Fourier coefficient, expansion of Fourier series depend on different intervals,analyze complex form of Fourier series on integrals and Fourier transform	Real world examples related to Fourier series and Fourier transform
		CO4	2	1.4	Ability to understand and analyze vector algebra, vector differential and integration.	Implemented by taking application of vectors in algebra, differential
		CO5	2.5	1.3	Ability to understand and analyze matrix algebra.	Implemented by taking application of matrix algebra.
		CO6	2.25	1.3	Student will able to understand Ability to understand vector calculus in real life problems.	Taking more examples depend on this
III	EDC-I	CO1	2	1.4	Students are able to understand various types of passive component and physical operation of diode	Student must be motivated to improve writing skills.
		CO2	2	1.35	Students are able to analyze, design rectifiers,filters and zener voltage regulator	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	1.3	Students are able to understand dc modeling,analyze and design of BJT,FET circuits	Laboratory exercises need to conduct for understanding.More numerical practice needed
		CO4	2	1.3	Students are able to understand small signal model and analysis of	More numerical practice needed for different

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					BJT,FET amplifier.	configurations.
		CO5	2	1.3	Students are able to determine frequency response of BJT & FET amplifier	Laboratory exercises need to conduct for understanding. More numerical practice needed.
		CO6	2	1.3	Students are able to design single stage RC coupled CE and CS amplifier.	More numerical practice can be taken through tutorials.
III	DSD	CO1	2	1.875	Students could recognize and perform interconversion and coding for binary numbers.	Student must be motivated to get familiarize with features of calculator for interconversion of number systems.
		CO2	3	1.25	Students need to practice to draw, simplify Boolean Equations..	More numerical practice can be taken through tutorials. Video lectures
		CO3	1.5	1.5	Students could design combinational logic circuits.	Laboratory exercises need to conduct for deeper understanding. More numerical practice needed.
		CO4	2	1.375	Students need practice for drawing state diagrams of finite state machines.	Practice problems can be taken up.
		CO5	2	1.375	Students were not convinced for selecting a particular logic devices.	Different applications for different logic devices can be shown using case studies and industrial visits.
		CO6	1.5	1.25	Students need practice to visualize the digital circuits as an entity for VHDL implementation.	Laboratory exercises need to conduct for understanding. More coding practice needed.
III	CTN	CO1	3	2.4	Students are able to analyze DC and AC circuits	More examples required
		CO2	2	2.3	Students are able to understand network topologies and graph theory for analyzing circuits	More examples required
		CO3	2	2.2	Students are able to evaluate time and frequency domain responses	More practical examples required

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Department of Electronics and Telecommunication Engineering

					of RL,RC,RLC circuits	
		CO4	2	2.6	Students are able to understand driving point and transfer functions and stability of circuits	More practice required
		CO5	2	2.6	Students are able to understand two port networks and different parameters used for analysis	More practice required
		CO6	2	2.3	Students are able to synthesis RLC circuits	More practice required
III	EIC	CO1	2.33	1.27	Students were able to understand basics. The definitions were a bit tough to memorize	Real life examples like mega ohm bridge and a situation of measurement was given.
		CO2	2	1.33	The working of transducers was very simple though practical is missing	Some selected transducers were shown to students to explain working.
		CO3	2	1.33	Telemetry and data acquisition system have block diagram which were tough to memorize.	The real world examples were discussed to bring more awareness of process.
		CO4	2.5	1.33	The block diagram reduction critical rules were a bit tough to understand	Diagramatic way of drawing helped them to understand the rules
		CO5	2.5	1.23	Time domain analysis was simple but root locus was a bit tricky for students.	A way of remembering steps of root locus was made and explained
		CO6	2.5	1.27	Frequency domain analysis was very lengthy.	The methods were explained with video lectures
V	DC	CO1	2	2.2	The student have been able to apply the concepts of information theory in source coding.	More ICT tools can be added.
		CO2	3	2.2	The student have been able to Compare different error control systems and apply various error detection codes.	More efforts required on Tutorials to improve writing skills.
		CO3	2	2.2	The students are able to Analyze different error correction codes	More practice problems can be taken.
		CO4	1	2.2	The students are able to Compare various baseband transmission methods for digital signals	Target achieved. Set higher target level.
		CO5	2	2.15	The students are able to Evaluate the performance of optimum baseband detection in the presence of white noise.	More efforts required on Tutorials to improve writing skills.
		CO6	2.5	2.15	The students are able to Compare	More efforts required on

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					the performances of different digital modulation techniques	Tutorials to improve writing skills.
V	DCE	CO1	3	1.34	Students are able to understand need of data compression and implement different text compression techniques.	Student must be motivated to practice methods and improve writing skills YouTube and NPTEL Videos is one of the best (formal and informal) learning platforms on the internet.
		CO2	3	1.35	Students are able to interpret different images and apply operations to compress them. More practice is required	We can introduce them about latest image processing methods and need to improve writing skills.
		CO3	3	1.3	Students are able to understand audio and video compression.	Student must be motivated to improve writing skills
		CO4	2	1.35	Students are able to understand modular arithmetic and implement symmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills.
		CO5	2	1.35	Students are able to understand number theory and implement asymmetric key cryptography schemes. More practice is required	More num practice can be taken and need to improve writing skills.
		CO6	3	1.3	Students are able to understand network security	Scope of all these topics can be increased for better understanding and need to improve writing skills.
V	MPI	CO1	2	1.4	Students were able to understand basic concepts of microcomputer system	Need more live examples.
		CO2	1.5	1.4	Students were able to able to draw and describe architecture of 8086 microprocessor	Need of Case studies for practice.
		CO3	1.5	1.3	Students were able to understand instructions and addressing modes of 8086	More practice is required to improve programming skills.
		CO4	1.5	1.35	Students were able to interface 8086 with different peripherals.	Need to take more interfacing problems.
		CO5	1.5	1.4	Students were able to interface ADC & DAC with 8086	Need to take real time applications.
		CO6	2	1.4	Students were able to understand math processor/co-processor 8087 and its interfacing with 8086.	Practical approach to be implemented.
V	BCE	CO1	2	3	Able to Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.	More practice will be provided
		CO2	2	3	Able to strategize their personal	More practice will be

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					and professional skills to build a professional image and meet the demands of the industry.	provided
		CO3	2	3	Emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.	More demonstrations will be provided
		CO4	2	3	Deliver persuasive and professional presentations.	Mock presentations, Group and individual, PEER presentations are organized
		CO5	2	3	Develop creative thinking and interpersonal skills required for effective professional communication.	Group and individual, PEER presentations and GDs are organized
V	DTSP	CO1	2	2.85	Students were able to understand DFT and FFT algorithms	Need to take more numerical.
		CO2	2	2.9	Students were able to solve numerical on IIR filter design	Need to take more numerical
		CO3	2	2.9	Students were able to solve numerical on FIR filter design	More practice is required to improve understanding of numerical.
		CO4	2	2.9	Students were able to understand finite length effects on digital filters	Need to relate with real world scenario.
		CO5	2	2.8	Students were able to understand various DSP processors & their architecture.	Need to take real time applications.
		CO6	2	2.8	Students were able to understand real world application of DSP.	Need to relate with real world applications.
V	EE	CO1	2	1.4	Students were able to learn basics of electrostatics and different laws, theorem	More practice is required to solve numerical
		CO2	2	1.4	Students were able to able understand and apply the equations of electric field, capacitance, and boundary conditions	More practice is required to solve numerical
		CO3	2	1.4	Students were able to learn different laws of magnetic field with its applications and boundary conditions	More practice is required to solve numerical
		CO4	2	1.4	Students were able understand the Maxwell's equation & electromagnetic wave propagation.	More practice is required to solve numerical

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		CO5	2	1.4	Students were able to learn different transmission line parameters and equations.	More practice is required to solve numerical
		CO6	2	1.4	Students were able to learn different applications of electromagnetic	More practice is required to solve numerical
VII	ME	CO1	2	1.4	The student will be able to describe the basics microwave , scattering parameters and to design impedance matching network using lumped and distributed parameters	More efforts required on Tutorials based on impedance matching designing
		CO2	2	1.3	The student will be able analyze the wave propagation in TE, TM or TEM modes, in structures such as rectangular waveguides and to discuss different passive devices	More efforts required on Tutorials to improve writing skills.
		CO3	2	1.35	The student will be able to identify and describe different microwave tubes.	More efforts required on Tutorials to improve writing skills.
		CO4	2	1.3	The student will be able to understand different microwave semiconductor diode.	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	2	1.3	The student will be able to discuss and demonstrate different microwave measurement techniques	More efforts required on Tutorials to improve writing skills.
		CO6	2	1.4	The student will be able to discuss the basics of Microwave Integrated circuits.	More efforts required on Tutorials to improve writing skills.
VII	MCS	CO1	2	1.25	Students are able to understand the concept of cellular system design.	Must be guided for proper representation and content for improvement in writing skills
		CO2	2	1.15	Students are able to understand different types of Mobile radio propagation.	Must be motivated for reading reference books and clear the concept
		CO3	2	1.13	Students are able to understand evolution of mobile communication generations and system architecture of 2G, 2.5G systems with their characteristics and limitations.	Must be motivated for reading reference books and clear the concept
		CO4	2	1.2	Students are able to understand system architecture of 3G systems.	Must be guided for proper representation and content for improvement in writing skills

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Department of Electronics and Telecommunication Engineering

		CO5	2	1.3	Students are able to understand network structure of 3 GPP in detail.	Must be guided for proper representation and content for improvement in writing skills
		CO6	2	1.2	Students will be able to understand emerging technologies required for fourth generation mobile systems such as Cognitive Radio, MIMO etc.	Must be motivated for solving problems from different reference books.
VII	OC	CO1	3	1.2	Students are able to understand the fundamentals principles of optics and light wave to design optical fiber communication Systems	Real time examples, applications and detailed study with practice is required
		CO2	2	1.25	Students are able to explain transmission characteristics of optical fiber communication.	Writing skills should be developed
		CO3	3	1.1	Students will be able to understand different light sources with applications.	More applications and there use needed to apply in real time.
		CO4	2	1.2	Students will be able to write and explain principles and characteristics of various detectors with its performance.	Written class test should be conducted for better result
		CO5	3	1.25	Students will be able to understand working and characteristics of couplers and multiplexer.	More applications and there use needed to apply in real time.
		CO6	2	1.3	Students are able to calculate parameters for optical link budgeting and analyze the link	More practice should be done
VII	ICE	CO1	2	1.3	The student are able to implement and analyze working of global internet including client server operating system and application layer protocols	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO2	2	1.4	The student are able to name, examine and understand services offered by TCP and UDP.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO3	2	1.4	The student are able to design and implement LAN using static and dynamic addressing techniques including subnetting.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO4	2	1.2	The student are able to illustrate internet security protocols and security services.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO5	2	1.25	The student are able to discuss and demonstrate multimedia communication standards and compression techniques.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO6	2	1.3	The student are able to discuss the	More efforts will be taken

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VIVA Institute of Technology
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Website: www.viva-technology.org
Department of Electronics and Telecommunication Engineering

					multimedia communication across the networks and QoS.	to improve writing skills and to explore upcoming technologies.
VII	MIS	CO1	2	1.4	Students understand Computer Based Information Systems, Impact of IT on organizations using some practical examples	Set higher target level
		CO2	2	1.4	Students understands difference between data information and knowledge. How much it is important for daily life.	Set higher target level
		CO3	2	1.35	Student understands what are the threats to IS and how to avoid information leak. What are the legal issues araise due information sharing.	Set higher target level
		CO4	2	1.4	Student understand how web sites are evolving from 1980 to 2022. B2B, B2C and C2C markets are working.	Set higher target level
		CO5	2	1.4	Students understands how computer networks are connected and information is shared through internet.	Set higher target level
		CO6	2	1.25	Students uderstands how transaction processing system is works, Enterprise resource planning is working.	Set higher target level

References:
1. Course file I (Path: in the department)
2. Course Summary (path: \\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)
3. Attainment level and result analysis

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2019-20

Academic Audit for AY 2019-20 **Even** semester is carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1(b): Teaching & Learning

SEM	Subject	No. Of available hours	No. Of hours engaged	Shortfall	Corrective action	Innovation in teaching method
IV	EM-IV	30	30	-	COVID 19 NO LECTURES	Use of Google Classroom
	EDC-II	44	26	18	COVID 19 NO LECTURES	Use of Google Classroom to provide softcopy of reference books, notes, university question papers and practical write-ups. Videos are used for better understanding of related topics.
	LIC	41	29	12	COVID 19 NO LECTURES	--
	SS	42	31	11	COVID 19 NO LECTURES	Use of Google Classroom
	PCE	42	29	13	COVID 19 NO LECTURES	--
VI	ARWP	38	27	11	COVID 19 NO Lectures	Use of Google classroom PowerPoint presentations.
	CCN	38	21	17	COVID 19 NO LECTURES	--
	IPMV	37	25	12	COVID 19 NO LECTURES	Use of Google classroom, PowerPoint presentations, Videos are used for better understanding of related topics..
	MA	36	23	13	COVID 19 NO LECTURES	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding
	DBMS	40	26	14	COVID 19 NO LECTURES	-
VIII	RFD	44	29	15	COVID 19 NO LECTURES	--
	WN	44	31	14	COVID 19 NO LECTURES	--
	SCOM	44	31	14	COVID 19 NO LECTURES	PPTs and demo with developed videos, NPTEL videos are shown and discussed.
	PM	33	18	15	COVID 19 NO LECTURES	-

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Department of Electronics and Telecommunication Engineering

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
IV	EDCL-II			
	LICL	741 opamp,555 timer,Cro,function generator	741 opamp,555 timer,Cro,function generator	--
	PCEL	Communication trainer kit, CRO, Function generator	Communication trainer kit, CRO, Function generator	--
VI	ARWP	IE3D, Antenna trainer kit, CRO,	IE3D, Antenna trainer kit, CRO,	
	CCNL	Cisco packet tracer software, networking hardware devices	Cisco packet tracer software, networking hardware devices	--
	IPMVL	MATLAB online	MATLAB	
	MAL	Computer Lab with 20 PCs. Keil µVision 4 and Keil µVision 5 Software	Computer Lab with 20 PCs. Keil µVision 4 and Keil µVision 5 Software	-
	DBMSL	Sqlite	Sqlite	--
VIII	RFDL	RFsim Software, Scilab, Vsim software	RFsim Software, Scilab, Vsim software	-
	WNL	Matlab, Arduino uno, wireshark	Matlab, Arduino uno, wireshark	
	SCOML	Trainer kits and MATLAB, Python.	Trainer kits and MATLAB, Python.	Students are allowed to use any coding language as per their proficiency.

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
IV	EM-IV	CO1	3	3	To Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.	Taking more examples depend on all terms in Complex
		CO2	3	3	Able To Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning and AI.	Real world examples related to Correlation and regression
		CO3	3	3	Able to Apply the concepts of probability and expectation for getting the spread of the data and distribution of probabilities.	Taking more examples depend on this.
		CO4	3		Able to Apply the concept of vector spaces and orthogonalization process in Engineering Problems.	Implemented by taking concept of vector space
		CO5	3		Able to understand the concept of correlation and regression . Demonstrate an ability to identify Use the concept of Quadratic forms and Singular value decomposition which are very useful tools in various Engineering applications simplify problems in the field of Electronics and Telecommunication and solve it.	Implemented by taking application of Use the concept of Quadratic forms and Singular value decomposition

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

		CO6	2		Able to Find the extremals of the functional using the concept of Calculus of variation.	Implemented by taking application of Calculus of variation.
IV	EDC-II	CO1	2	3	Students are able to understand basic operation of MOSFET and its design.	Student must be motivated to improve writing skills.
		CO2	2	2.95	Students are able to understand the operation of multistage amplifier using BJT and FET in various configuration. Also able to determine frequency response and voltage gain	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	2.9	Students are able design multistage amplifier for a given specifications.	More numerical practice needed.
		CO4	2	3		More numerical practice needed for different configurations.
		CO5	2	3	Students are able to understand concept of feedback amplifier and their characteristics.	Laboratory exercises need to conduct for understanding. More numerical practice needed.
		CO6	2	3	Students are able to design the different oscillator circuits for various frequencies.	More numerical practice can be taken through tutorials.
IV	LIC	CO1	2.66	2.85	Students were finding difficulty in understanding basics of op-amp	Working of transistor was being revised
		CO2	2.66	2.8	The initial applications of opamp was easy and students understood it	Practical sessions was involved to bring more depth in concepts
		CO3	2.66	2.8	Nonlinear applications of Opamp was a little tough for students	The working of opamp as comparator and analyzing it instant by instant helped them to get output graph
		CO4	2.66	2.8	The A to D converters was a bit tough to understand for	Opamp as comparator working helped them to understand the

					students	concepts
		CO5	2.66	2.8	Timer IC operation was a bit difficult for students to understand	The pin configuration was given special pointer tags to remember and hence its working
		CO6	2.66	2.8	Regulator IC designing was tough for some students	The working of regulator IC was demonstrated with the help of practical.
IV	SS	CO1	2	1.9	Students are able to understand classification of signals and systems and will be able to perform operations on signals.	Set higher target level
		CO2	2	2.1	Students are able to analyze CT and DT LTI signals and systems in time domain.	Set higher target level
		CO3	2	2	Students are able to analyze CT and DT LTI signals and systems using Fourier analysis tools like CTFT and DTFT.	Set higher target level
		CO4	2	2	Students are able to analyze D.T. LTI system using Z- Transform.	Set higher target level
		CO5	2	2	Students are lagging in finding easiest method of solution for university exam questions.	Set higher target level
		CO6	2	2	Students are able to realize (construct) different structures for FIR and IIR systems	Set higher target level
IV	PCE	CO1	2	1.2	Students were able to understand different noises in communication system and basics of analog communication	More efforts required on tutorials to improve writing skills.
		CO2	2	1.3	Students were able to understand Amplitude Modulation and Demodulation	More efforts required on tutorials to improve writing skills.
		CO3	3	1.1	Students were able to understand different modulation and demodulation techniques used in Analog	More efforts required on tutorials to improve writing skills.

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

					communication	
		CO4	2	-	-	-
		CO5	3	-	-	-
		CO6	3	-	-	-
VI	ARWP	CO1	2	2.5	Students will be able to understand fundamentals parameters and radiation mechanism of antenna.	More examples can be used for understanding
		CO2	2	2.25	Students will be able to learn linear wire antenna, loop antenna and helical antenna	More examples can be used for understanding
		CO3	2	2.5	Students will be able to understand and design array	More practice of writing the answers must be taken, through classwork or tutorials.
		CO4	2	2	Students will be able to understand special type of antennas such as horn and reflectors	More examples can be used for understanding
		CO5	2	2	Students will be able to understand MSA and designing	More numerical examples are required
		CO6	2	2	Students will be able to learn antenna measurements and radio wave propagation	More practice of writing the answers must be taken, through classwork or tutorials.
VI	CCN	CO1	2	3	Students are able to understand the standards and protocol for computer communication	Set higher target
		CO2	3	2.9	Students are able to design small computer network using physical topology	Set higher target, and conduct practical session for better understanding
		CO3	3	3	Students are able to understand the data link layer protocol	Practical knowledge should be made available by site visit
		CO4	2	2.4	The student are able to troubleshoot connectivity problems in a host occurring at multiple layers of OSI model	Set higher target, extra lecture and doubt clearing session will be organize
		CO5	3	2.4	The student are able to perform basic configurations on routers and Ethernet communications	Actual router implementation concept should be clear
		CO6	3	2.4	The students are able to implement LAN using static	Set higher target

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

					and dynamic addressing techniques including subnetting.	
VI	IPMV	CO1	2	3	Understand fundamentals of image processing and machine vision.	More efforts required on Tutorials to improve writing skills.
		CO2	1.5	3	Enhance the quality of image using spatial and frequency domain techniques for image enhancement.	More efforts required on Tutorials to improve writing skills.
		CO3	2	3	Learn image morphology and restoration techniques.	More efforts required on Tutorials to improve writing skills.
		CO4	2	3	Learn image segmentation techniques based on principle of discontinuity and similarity using various algorithms.	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	2	3	Represent boundaries and shapes using standard techniques.	More efforts required on Tutorials to improve writing skills.
		CO6	2	3	Classify the object using different classification methods.	More efforts required on Tutorials to improve writing skills.
VI	MA	CO1	2	2.9	Students were able to able to draw and describe architecture of 8051 microcontroller.	Set higher target level.
		CO2	2	2.85	Students were able to write assembly language program for 8051 microcontroller.	Set higher target level.
		CO3	2	2.9	Student got the knowledge about interfacing various peripheral devices to the 8051 microcontroller.	Set higher target level.
		CO4	2	2.8	Students were able to draw and describe architecture of ARM7 microcontroller.	Set higher target level.
		CO5	2	2.8	Students were able to write assembly language program for ARM7 microcontroller.	Set higher target level.
		CO6	2	2.8	Students were able to write embedded C program for ARM7 microcontroller.	Set higher target level.
VI	DBMS	CO1	2	2.75	Students understood the evolution of database very well	Theory was explained using video lectures

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

		CO2	2	2.5	The entire architecture of database was very well explained	Diagram and figures were more elaborately explained
		CO3	3	2.75	ER diagram being a wonderful tool towards analysis of database design	Diagram was explained with different case studies and practices
		CO4	3	2.5	Relational algebra and calculus though interesting but students found it difficult	Relational algebra and calculus was explained with more examples
		CO5	3	2.5	The constraints and views were difficult for students	The constraints and views were difficult for students
		CO6	2	2.5	Students found that transaction management was a very important aspect in today's growing technology	Students found that transaction management was a very important aspect in today's growing technology
VIII	**RFD**	CO1	2.5	3	Students were be able to design filters	Higher target level cab be set
		CO2	2.33	2.95	Students were be able to design and appraise RF amplifiers	Higher target level cab be set
		CO3	2.33	3	Students were be able to design and appraise RF oscillators	Higher target level cab be set
		CO4	2	3	Students were be able to analyze frequency synthesizers	Higher target level cab be set
		CO5	2	3	Students were be able to analyze EMI in RF Circuits	Higher target level cab be set
		CO6	2	**2.8**	Students were be able to analyze EMC in RF Circuits	Higher target level cab be set
VIII	**WN**	CO1	2	3	The student will be able to understand and classification wireless network and WBAN and their applications	Students writing skills and observation needs to improve
		CO2	2	3	The students will be able to get different types and their applications of wireless network.	Need some practical exposure of wireless network applications
		CO3	2	3	Student found this module very interesting as it	set higher target level.

					contains daily life technologies.	
		CO4	2	3	Students learnt the planning and design concepts of WAN through different numerical examples.	More assignments and practice is required for numerical examples as well as some real life examples will make numerical easy to understand.
		CO5	2	3	Students learn different types of adhoc network	Writing skills needs to improve
		CO6	2	3	Students got the overview of wireless sensor networks and IOT with real life examples	More number of videos illustrating different application shown
VIII	SCOM	CO1	2	2.85	The student are able to understand and demonstrate basics of satellite communication and launching techniques	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO2	2	2.85	The student are able to provide in depth understanding of satellite operation and its space qualification.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO3	2	3	The student are able to provide in depth understanding of earth station technology.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO4	2	3	The student are able to understand and analyze satellite link design	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO5	2	3	The student are able to analyze various methods of satellite access.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO6	2	2.9	The student are able understand various applications of satellite communication and future trends.	The student are able to understand and demonstrate basics of satellite communication and

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Department of Electronics and Telecommunication Engineering

						launching techniques
VIII	**PM**	CO1	**2**	2.95	The student will be able apply selection criteria and select an appropriate project from different options.	More efforts required on Tutorials to improve writing skills.
		CO2	**2**	3	The student will be able to understand Project initiation process and documents required for it.	More efforts required on Tutorials to improve writing skills.
		CO3	**2**	2.9	The student will be able to write work break down structure for a project and develop a schedule based on it.	More efforts required on Tutorials to improve writing skills.
		CO4	**2**	3	The student will be able to identify opportunities and threats to the project and decide an approach to deal with them strategically.	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	**2**	3	The student will be able to use Earned value technique and determine & predict status of the project.	More efforts required on Tutorials to improve writing skills.
		CO6	**2**	3	Capture lessons learned during project phases and document them for future reference.	More efforts required on Tutorials to improve writing skills.

References:
1. Course file I (Path: in the department)
2. Course Summary (path:\\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)

Activities undertaken for faculties and students

Sr.No.	Description	Resource Person	Date
1	Cell Phone / Tower Hazards and Solutions by Dr. Girish kumar, Professor IITB	Dr. Girish Kumar, IITB	18th July 2019
2	Optical Fiber Communication	Mr. Ashok Suryavanshi, Deputy Manager (Transmission), Faculty	19th July 2019

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

		member at CETTM, MTNL, Powai	
3	Embedded, Automation & IoT	Mr. Asrar Khan, Senior Instructor, Prolific Systems and Technologies Pvt Ltd.	24th July 2019
4	Challenges in RealTime Networking Communication	Mr. Pratik Kadam, TCS, Mumbai	1st August 2019.
5	Drones & Its Applications	Mr. Siddhesh Naik, Sr. Design Engineer, LARSEN &TOUBRO ,Powai	9th August 2019
6	Workshop on Nano Satellite-Design and Development	Mr. Anshul Verma, Geekslab Technologies Pvt. Ltd. In association with AIESEC, IIT-Delhi	19th & 20th September, 2019
7	Industrial Visit to Hindustan Coca-cola Beverages Pvt. Ltd, Wada		11th October 2019

- ISTE/IETE approved STTP:

Sr.No.	Topic	Resource Person	Date
1.	Research with MATLAB and Simulink	Mr. Suraj Gawande, DesignTech, MATLAB Dr. Tatwadarshi Nagarhalli Assistant Professor, VIVA-TECH Mr. Nitin Rai Mr. Santosh Chapneri Prof , SFIT	6th November 2019 to 13th November 2019

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2020-21

Academic Audit for AY 2020-21 Odd semesters carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1 Teaching & Learning Process

SEM	Subject	No. Of available hours	No. Of hours engaged	Short fall	Corrective action	Innovation in teaching method
III	EM-III	46	46	-	-	Use of Google meet
	EDC	47	47	-	-	Use of Google meet
	DSD	53	53	-	-	Use of Google meet/zoom
	NT	36	36			Use of Google meet
	EICS	56	56	-	-	Use of Google meet/zoom
V	DC	48	61	-	-	Use of Google meet/zoom
	DCE	43	43	-	-	Use of Google meet, NPTEL videos, online quiz
	MPI	55	55	-	-	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding, online quiz
	BCE	11	11	-	-	
	DTSP	41	41	-	-	
	EE	36	36	-	-	Use of Google classroom to provide reference books and notes. Virtual Lab experiments conducted for better understanding. More practice is given during tutorials
VII	ME	49	49	-	-	Use of Google classroom to provide reference books and notes. Virtual Lab experiments conducted for better understanding. More practice is given during tutorials
	MCS	49	49	--	-	Use of Google meet, NPTEL videos, online quiz on topic covered during lecture.
	OC	44	44	-	-	Use of Google meet, NPTEL videos, online quiz
	ICE	54	54	-	-	PPTs and demo with developed videos, NPTEL videos are shown and discussed.
	MIS	28	28	-	-	

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Department of Electronics and Telecommunication Engineering

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
III	EDC	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	-
	DSD	Digital trainer kits	Digital trainer kits	
	EICS	Bridge kits,LVDT kit	Bridge kits,LVDT kit	-
	SKILL LAB C++	Dev c++,JDK	Dev c++,JDK	-
	MP 1A	20 PC with internet connectivity	20 PC with internet connectivity	
V	DC	Modulation kits,MATLAB	Modulation kits,MATLAB	
	DCE	/SCILAB	20 PC with MATLAB/SCILAB	--
	MPI	20 PC with Tasam Emulator	20 PC with Tasam Emulator	
	DTSP	20 PC with MATLAB/SCILAB	20 PC with MATLAB/SCILAB	
	OSTCL	EAGLE software,PCB,etching machine,etching solution,PCs	EAGLE software,PCB,etching machine,etching solution,PCs	
VII	ME	Microwave test bench, DSO, scilab	Microwave test bench, DSO, scilab	-
	MCS	20 PC's with MATLAB/SCILAB	20 PC's with MATLAB/SCILAB	Conducted in online mode, MATLAB Online available
	OC	Optical trainer kit	Optical trainer kit	--
	ICE	Cisco packet tracer and MATLAB, Python, VOIP, CISCO switch and router	Cisco packet tracer and MATLAB, Python, VOIP, CISCO switch and router	Students are allowed to use any coding language as per their proficiency.

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Department of Electronics and Telecommunication Engineering

Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
III	EM-III	CO1	2	2.8	Able to Understand the concept of Laplace transform and its application to solve the real integrals in engineering problems	Taking more examples depend on all terms in Laplace transform
		CO2	2	3	Able to Understand the concept of inverse Laplace transform of various functions and its applications in engineering problems.	Taking more examples depend on all terms in inverse Laplace transform
		CO3	3	3	Students were able to Expand the periodic function by using Fourier series for real life problems and complex engineering problems.	Real world examples related to Fourier series and Fourier transform
		CO4	2.5	2.9	Able to Understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic function.	Implemented by taking application of complex variable theory, application
		CO5	2.5	3	Able to Use matrix algebra to solve the engineering problems.	Implemented by taking application of MATRIX
		CO6	2.25	2.8	Student will be able to Apply the concepts of vector calculus in real life problems	Taking more examples depend on this
III	EDC	CO1	2	2.9	Students should be able to understand working of various Electronic Devices.	Student must be motivated to improve writing skills.
		CO2	2	2.85	Students should be able to perform dc analysis of BJT, FET & MOSFET circuits in various configuration.	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	2.85	Students will be able to perform and analyze small signal modeling of BJT, JFET & MOSFET	Laboratory exercises need to conduct for understanding.More numerical practice needed
		CO4	2	2.9	Students should be able to understand and perform Low frequency & high frequency analysis of BJT, JFET & MOSFET	More numerical practice needed for different configurations.
		CO5	2	2.85	Students should be able to understand and perform analysis of	Laboratory exercises need to conduct for

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

					Large signal Amplifiers	understanding. More numerical practice needed.
		CO6	2	2.9	Students will able to understand differential amplifiers & its applications in OpAmp	More numerical practice can be taken through tutorials.
III	DSD	CO1	2	2.8	Students could recognize and perform interconversion and coding for binary numbers.	Student must be motivated to get familiarize with features of calculator for interconversion of number systems.
		CO2	2	2.7	Students need to practice to draw, simplify Boolean Equations..	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	2.8	Students could design combinational logic circuits.	Laboratory exercises need to conduct for deeper understanding. More numerical practice needed.
		CO4	2	2.9	Students need practice for drawing state diagrams of finite state machines.	Practice problems can be taken up.
		CO5	2	2.9	Students were not convinced for selecting a particular logic devices.	Different applications for different logic devices can be shown using case studies and industrial visits.
		CO6	2	2.9	Students need practice to visualize the digital circuits as an entity for VHDL implementation.	Laboratory exercises need to conduct for understanding. More coding practice needed.
III	NT	CO1	3	2.93	Students are able to analyze DC and AC circuits	Set higher target level
		CO2	2	2.87	Students are able to understandnetwork topologies and graph theory for analyzing circuits	Set higher target level
		CO3	2	2.89	Students are able to evaluate time and frequency domain responses of RL,RC,RLC circuits	Set higher target level
		CO4	2	2.93	Students are able to understanddriving point and transfer functions and stability of	Set higher target level

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					circuits	
		CO5	2	2.93	Students are able to understandtwo port networks and different parameters used for analysis	Set higher target level
		CO6	2	2.92	Students are able to synthesis RLC circuits	Set higher target level
III	EICS	CO1	2.33	2.66	Students were able to understand basics. The definitions were a bit tough to memorize	Real life examples like mega ohm bridge and a situation of measurement was given.
		CO2	2	2.58	The working of transducers was very simple though practical is missing	Some selected transducers were shown to students to explain working.
		CO3	2	2.5	Telemetry and data acquisition system have block diagram which were tough to memorize.	The real world examples were discussed to bring more awareness of process.
		CO4	2.5	2.5	The block diagram reduction critical rules were a bit tough to understand.	Diagramatic way of drawing helped them to understand the rules
		CO5	2.5	2.66	Time domain analysis was simple but root locus was a bit tricky for students.	A way of remembering steps of root locus was made and explained
		CO6	2.5	2.58	Frequency domain analysis was very lengthy.	The methods were explained with video lectures

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Department of Electronics and Telecommunication Engineering

V	DC	CO1	3	2.8	The student have been able to apply the concepts of information theory in source coding.	More ICT tools can be added.
		CO2	3	2.85	The student have been able to Compare different error control systems and apply various error detection codes.	More efforts required on Tutorials to improve writing skills.
		CO3	3	2.85	The students are able to Analyze different error correction codes	More practice problems can be taken.
		CO4	2	2.9	The students are able to Compare various baseband transmission methods for digital signals	Target achieved. Set higher target level.
		CO5	2	2.9	The students are able to Evaluate the performance of optimum baseband detection in the presence of white noise.	More efforts required on Tutorials to improve writing skills.
		CO6	3	2.9	The students are able to Compare the performances of different digital modulation techniques	More efforts required on Tutorials to improve writing skills.
V	DCE	CO1	3	2.9	Students are able to understand need of data compression and implement different text compression techniques.	Student must be motivated to practice methods and improve writing skills
		CO2	3	2.9	Students are able to interpret different images and apply operations to compress them. More practice is required	We can introduce them about latest image processing methods and need to improve writing skills.
		CO3	3	3	Students are able to understand audio and video compression.	Student must be motivated to improve writing skills
		CO4	3	3	Students are able to understand modular arithmetic and implement symmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills.
		CO5	3	3	Students are able to understand number theory and implement asymmetric key cryptography schemes. More practice is required	More num practice can be taken and need to improve writing skills.
		CO6	3	3	Students are able to understand network security	Scope of all these topics can be increased for better understanding and need to improve writing skills.

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Department of Electronics and Telecommunication Engineering

V	MPI	CO1	2	3	Students were able to understand basic concepts of microcomputer system	Set higher target level.
		CO2	2	2.9	Students were able to able to draw and describe architecture of 8086 microprocessor	Set higher target level.
		CO3	2	2.8	Students were able to understand instructions and addressing modes of 8086	Set higher target level.
		CO4	2	2.9	Students were able to interface 8086 with different peripherals.	Set higher target level.
		CO5	2	2.9	Students were able to interface ADC & DAC with 8086	Set higher target level.
		CO6	2	2.9	Students were able to understand math processor/co-processor 8087 and its interfacing with 8086.	Set higher target level.
V	BCE	CO1	2	3	Able to Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.	More practice will be provided
		CO2	2	3	Able to strategize their personal and professional skills to build a professional image and meet the demands of the industry.	More practice will be provided
		CO3	2	3	Emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.	More demonstrations will be provided
		CO4	2	3	Deliver persuasive and professional presentations.	Mock presentations, Group and individual, PEER presentations are organized
		CO5	2	3	Develop creative thinking and interpersonal skills required for effective professional communication.	Group and individual, PEER presentations and GDs are organized
V	DTSP	CO1	2	3	Students were able to understand DFT and FFT algorithms	Need to take more numerical.
		CO2	2	2.9	Students were able to solve numerical on IIR filter design	Need to take more numerical
		CO3	2	3	Students were able to solve numerical on FIR filter design	More practice is required to improve understanding

						of numerical.
		CO4	**2**	3	Students were able to understand finite length effects on digital filters	Need to relate with real world scenario.
		CO5	**2**	2.9	Students were able to understand various DSP processors & their architecture.	Need to take real time applications.
		CO6	**2**	2.9	Students were able to understand real world application of DSP.	Need to relate with real world applications.
V	EE	CO1	2	2.93333	Students were able to learn basics of electrostatics and different laws, theorem	Set higher target level and students must be motivated to practice more numericals
		CO2	2	3	Students were able to able understand and apply the equations of electric field, capacitance, and boundary conditions	Set higher target level and students must be motivated to practice more numericals
		CO3	2	2.93333	Students were able to learn different laws of magnetic field with its applications and boundary conditions	Set higher target level and students must be motivated to practice more numericals
		CO4	2	3	Students were able understand the Maxwell's equation & electromagnetic wave propagation.	Set higher target level and students must be motivated to practice more numericals
		CO5	2	3	Students were able to learn different transmission line parameters and equations.	Set higher target level and students must be motivated to practice more numericals
		CO6	2	3	Students were able to learn different applications of electromagnetic	Set higher target level and students must be motivated to practice more numericals

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Department of Electronics and Telecommunication Engineering

VII	ME	CO1	2	3	The student will be able to describe the basics microwave , scattering parameters and to design impedance matching network using lumped and distributed parameters	Set higher target level
		CO2	2	3	The student will be able analyze the wave propagation in TE, TM or TEM modes, in structures such as rectangular waveguides and to discuss different passive devices	Set higher target level
		CO3	2	3	The student will be able to identify and describe different microwave tubes.	Set higher target level
		CO4	2	2.9	The student will be able to understand different microwave semiconductor diode.	Set higher target level
		CO5	2	3	The student will be able to discuss and demonstrate different microwave measurement techniques	Set higher target level
		CO6	2	3	The student will be able to discuss the basics of Microwave Integrated circuits.	Set higher target level
VII	MCS	CO1	2	2.9	Students are able to understand the concept of cellular system design.	In online mode, students performed well for MCQ's. Must be guided for proper representation and content for improvement in writing skills
		CO2	2	2.85	Students are able to understand different types of Mobile radio propagation.	
		CO3	2	2.83	Students are able to understand evolution of mobile communication generations and system architecture of 2G, 2.5G systems with their characteristics and limitations.	
		CO4	2	2.8	Students are able to understand system architecture of 3G systems.	
		CO5	2	2.9	Students are able to understand network structure of 3 GPP in detail.	
		CO6	2	2.9	Students will be able to understand emerging technologies required for fourth generation mobile systems such as Cognitive Radio, MIMO etc.	
VII	OC	CO1	3	3	Students are able to understand the fundamentals principles of optics and light wave to design optical fiber communication Systems	Real time examples, applications and detailed study with practice is required

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Department of Electronics and Telecommunication Engineering

		CO2	2	2.5	Students are able to explain transmission characteristics of optical fiber communication.	Writing skills should be developed
		CO3	3	3	Students will be able to understand different light sources with applications.	More applications and there use needed to apply in real time.
		CO4	2	3	Students will be able to write and explain principles and characteristics of various detectors with its performance.	Written class test should be conducted for better result
		CO5	3	3	Students will be able to understand working and characteristics of couplers and multiplexer.	More applications and there use needed to apply in real time.
		CO6	2	3	Students are able to calculate parameters for optical link budgeting and analyze the link	More practice should be done
VII	ICE	CO1	2	3	The student are able to implement and analyze working of global internet including client server operating system and application layer protocols	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO2	2	3	The student are able to name, examine and understand services offered by TCP and UDP.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO3	2	3	The student are able to design and implement LAN using static and dynamic addressing techniques including subnetting.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO4	2	3	The student are able to illustrate internet security protocols and security services.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO5	2	3	The student are able to discuss and demonstrate multimedia communication standards and compression techniques.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO6	2	3	The student are able to discuss the multimedia communication across the networks and QoS.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
VII	MIS	CO1	2	3	Students understand Computer Based Information Systems, Impact of IT on organizations using some practical examples	Set higher target level
		CO2	2	2.87	Students understands difference	Set higher target level

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					between data information and knowledge. How much it is important for daily life.	
		CO3	2	3	Student understands what are the threats to IS and how to avoid information leak. What are the legal issues araise due information sharing.	Set higher target level
		CO4	2	3	Student understand how web sites are evolving from 1980 to 2022. B2B, B2C and C2C markets are working.	Set higher target level
		CO5	2	3	Students understands how computer networks are connected and information is shared through internet.	Set higher target level
		CO6	2	3	Students understands how transaction processing system is works, Enterprise resource planning is working.	Set higher target level

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2020-21

Academic Audit for AY 2020-21 **Even** semester is carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1(b): Teaching & Learning

SEM	Subject	No. Of available hours	No. Of hours engaged	Shortfall	Corrective action	Innovation in teaching method
IV	EM-IV	44	44	-		
	MC	30	30	-		Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding
	LIC	22	22			
	SS	35	35	-	-	Use of Google classroom to provide reference books and notes. Virtual Lab experiments conducted for better understanding. More practice is given during tutorials.
	PCE	30	30	-	-	
VI	ARWP	36	36			
	CCN	35	35			
	IPMV	35	35	-	-	-
	MA	51	51	-	-	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding
	DBMS	36	49	-	-	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding
VIII	RFD	46	46			Use of Google classroom to provide reference books and notes. Virtual Lab experiments conducted for better understanding. More practice is given during tutorials
	WN	45	46	-	-	Use of Google classroom to provide reference books and notes
	SCOM	46	46	-	-	PPTs and demo with developed videos, NPTEL videos are shown and discussed.
	PM	35	35			

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Department of Electronics and Telecommunication Engineering

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
IV	MC	Computer Lab with 20 PCs. Keil µVision 4 and Keil µVision 5 Software	Computer Lab with 20 PCs. Keil µVision 4 and Keil µVision 5 Software	-
	LIC	Multimeter, CRO, Breadboard, power supply	Multimeter, CRO, Breadboard, power supply	--
	PCE	Communication trainer kit, CRO, Function generator	Communication trainer kit, CRO, Function generator	
	Skill lab Python	Visual studio,python 3.9	Visual studio,python 3.9	--
	MP 1B	KEIL SOFTWARE,PC	KEIL SOFTWARE,PC	--
VI	ARWP	IE3D, Antenna trainer kit, CRO,	IE3D, Antenna trainer kit, CRO,	
	CCNL	Cisco packet tracer software, networking hardware devices	Cisco packet tracer software, networking hardware devices	
	IPMVL	MATLAB,PC	MATLAB,PC	
	MAL	Keil µVision 4 and Keil µVision 5 Software	Keil µVision 4 and Keil µVision 5 Software	-
	DBMSL	SQLITE	SQLITE	-
VIII	RFDL	Scilab, Vsim software, RF sim software, Network analyzer	Scilab, Vsim software, RF sim software, Network analyzer	--
	WNL	Matlab, Arduino Uno, Wireshark	Matlab, Arduino Uno, Wireshark	--
	SCOML	Trainer kits and MATLAB, Python.	Trainer kits and MATLAB, Python.	Students are allowed to use any coding language as per their proficiency.

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Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
IV	EM-IV	CO1	3	3	To Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.	Taking more examples depend on all terms in Complex
		CO2	3	2.9	Able To Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning and AI.	Real world examples related to Correlation and regression
		CO3	3	3	Able to Apply the concepts of probability and expectation for getting the spread of the data and distribution of probabilities.	Taking more examples depend on this.
		CO4	3	2.8	Able to Apply the concept of vector spaces and orthogonalization process in Engineering Problems.	Implemented by taking concept of vector space
		CO5	3	2.9	Able to understand the concept of correlation and regression . Demonstrate an ability to identify Use the concept of Quadratic forms and Singular value decomposition which are very useful tools in various Engineering applications simplify problems in the field of Electronics and Telecommunication and	Implemented by taking application of Use the concept of Quadratic forms and Singular value decomposition

					solve it.	
		CO6	2.5	2.8	Able to Find the extremals of the functional using the concept of Calculus of variation.	Implemented by taking application of Calculus of variation.
IV	MC	CO1	2	2.9	Students were able to understand computer system.	Set higher target level.
		CO2	2	2.9	Students were able to understand memory system.	Set higher target level.
		CO3	2	2.95	Students were able to draw and describe architecture of 8051 microcontroller.	Set higher target level.
		CO4	2	3	Students were able to write assembly language program and interface various peripheral devices to the 8051 microcontroller.	Set higher target level.
		CO5	2	3	Students were able to draw and describe architecture of ARM7 microcontroller and write assembly language program for ARM7 microcontroller.	Set higher target level.
		CO6	2	2.9	Students were able to design microcontroller applications.	Set higher target level.
IV	LIC	CO1	3	3	Students were finding difficulty in understanding basics of op-amp	Working of transistor was being revised
		CO2	3	2.9	The initial applications of opamp was easy and students understood it	Practical sessions was involved to bring more depth in concepts
		CO3	3	3	Non linear applications of Opamp was a little tough for students	The working of opamp as comparator and analyzing it instant by instant helped them to get output graph
		CO4	3	2.95	Timer IC operation was a	The pin configuration was

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Department of Electronics and Telecommunication Engineering

					bit difficult for students to understand	given special pointer tags to remember and hence its working
		CO5	3	2.95	Regulator IC designing was tough for some students	The working of regulator IC was demonstrated with the help of practical.
		CO6	3	2.95	Function block diagram of VCO and PLL IC was done	Practical knowledge was enhance during working on laboratory part
IV	SS	CO1	2	2	Students will be able to understand classification of signals and systems and will be able to perform operations on signals.	In online mode, Student performed well for MCQ's. More practice need to be taken to clear the concept
		CO2	2	1.75	Students will be able to analyze CT and DT LTI signals and systems in time domain.	More practice need to be taken to clear the concept.
		CO3	2	2.25	Students will be able to analyze CT and DT LTI signals and systems using Fourier analysis tools like CTFT and DTFT.	In online mode, Student performed well for MCQ's. More practice need to be taken to clear the concept
		CO4	2	2.5	Students will be able to analyze C.T. LTI system using Laplace Transform.	
		CO5	2	2	Students will be able to analyze D.T. LTI system using Z- Transform.	
		CO6	2	2.5	Students will be able to realize (construct) different structures for FIR and IIR systems.	
IV	PCE	CO1	2	2.9	Students were able to understand different noises in communication system and basics of analog communication.	Practical & tutorial were conducted on this topic.
		CO2	2	2.9	Students got the knowledge of AM modulation technique	Numericals given for practice
		CO3	2	2.9	Student got the knowledge of angle modulation	Practicals and tutorials were taken on this topic.

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Department of Electronics and Telecommunication Engineering

					technique	
		CO4	2	2.9	Students were able to describe sampling technique and use it in modulation process.	They have used the sampling process in digital modulation technique.
		CO5	2	2.9	Students were able to draw and explain analog pulse modulation technique.	Practically made them understand Analog pulse modulation technique.
		CO6	2	2.9	Students were able to explain digital modulation technique.	Tutorial and practical were conducted on this topic.
VI	ARWP	CO1	2	3	Students will be able to understand fundamentals parameters and radiation mechanism of antenna.	Set higher target level
		CO2	2	2.9	Students will be able to learn linear wire antenna, loop antenna and helical antenna	Set higher target level
		CO3	2	3	Students will be able to understand and design array	Set higher target level
		CO4	2	3	Students will be able to understand special type of antennas such as horn and reflectors	Set higher target level
		CO5	2	3	Students will be able to understand MSA and designing	Set higher target level
		CO6	2	3	Students will be able to learn antenna measurements and radio wave propagation	Set higher target level
VI	CCN	CO1	2.5	3	Students are able to understand the standards and protocol for computer communication	Set higher target
		CO2	3	3	Students are able to design small computer network using physical topology	Set higher target, and conduct practical session for better understanding
		CO3	2.75	3	Students are able to understand the data link layer protocol	Practical knowledge should be made available by site visit
		CO4	3	3	The student are able to troubleshoot connectivity problems in a host occurring at multiple layers of OSI model	Set higher target, extra lecture and doubt clearing session will be organize
		CO5	3	3	The student are able to	Actual router implementation

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
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Department of Electronics and Telecommunication Engineering

					perform basic configurations on routers and Ethernet communications	concept should be clear
		CO6	3	3	The students are able to implement LAN using static and dynamic addressing techniques including subnetting.	Set higher target
VI	IPMV	CO1	2	3	The student will be Understand fundamentals of image processing and machine vision	More efforts required on Tutorials to improve writing skills.
		CO2	1.5	3	The student will be able to Enhance the quality of image using spatial and frequency domain techniques for image enhancement	More efforts required on Tutorials to improve writing skills.
		CO3	2	3	The student will be able to Learn image morphology and restoration techniques	More efforts required on Tutorials to improve writing skills.
		CO4	2	2.25	The student will be able to Learn image segmentation techniques based on principle of discontinuity and similarity using various algorithms.	More efforts required on Tutorials to improve writing skills.
		CO5	2	3	The student will be able to Represent boundaries and shapes using standard techniques.	More efforts required on Tutorials to improve writing skills.
		CO6	2	2.75	The student will be able to Classify the object using different classification methods	More efforts required on Tutorials to improve writing skills.
VI	MA	CO1	2	3	Students were able to able to draw and describe architecture of 8051 microcontroller.	Set higher target level.
		CO2	2	3	Students were able to write assembly language program for 8051 microcontroller.	Set higher target level.
		CO3	2	3	Student got the knowledge about interfacing various	Set higher target level.

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Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

					peripheral devices to the 8051 microcontroller.	
		CO4	2	3	Students were able to draw and describe architecture of ARM7 microcontroller.	Set higher target level.
		CO5	2	3	Students were able to write assembly language program for ARM7 microcontroller.	Set higher target level.
		CO6	2	3	Students were able to write embedded C program for ARM7 microcontroller.	Set higher target level.
VI	DBMS	CO1	2	3	Students understood the evolution of database very well	Theory was explained using video lectures
		CO2	2	3	The entire architecture of database was very well explained	Diagram and figures were more elaborately explained
		CO3	3	3	ER diagram being a wonderful tool towards analysis of database design	Diagram was explained with different case studies and practices
		CO4	3	3	Relational algebra and calculus though interesting but students found it difficult	Relational algebra and calculus was explained with more examples
		CO5	3	3	The constraints and views were difficult for students	Examples will prove very beneficial for deeper understanding
		CO6	2	3	Students found that transaction management was a very important aspect in today's growing technology	Roleplay was being conducted to explain transaction management
VIII	RFD	CO1	3	3	Students were able to design and appraise RF filters	-
		CO2	3	2.85	Students were be able to design and appraise RF amplifiers	Set higher target level
		CO3	2.5	3	Students were be able to design and appraise RF oscillators	Set higher target level
		CO4	2	3	Students were able to analyze and design frequency synthesizers	Set higher target level

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Department of Electronics and Telecommunication Engineering

		CO5	2.5	3	Students were be able to analyze EMI in RF Circuits	Set higher target level
		CO6	2	**2.8**	Students were able to analyze EMC in RF Circuits	Set higher target level
VIII	**WN**	CO1	2	3	The student will be able to understand and classification wireless network and WBAN and their applications	Students writing skills and observation needs to improve
		CO2	2	3	The students will be able to get different types and their applications of wireless network.	Set higher target level
		CO3	2	3	Student found this module very interesting as it contains daily life technologies.	set higher target level.
		CO4	2	3	Students learnt the planning and design concepts of WAN through different numerical examples.	More assignments and practice is required for numerical examples as well as some real life examples will make numerical easy to understand
		CO5	2	3	Students learn different types of adhoc network	Writing skills needs to improve
		CO6	2	3	Students got the overview of wireless sensor networks and IOT with real life examples	More number of videos illustrating different application shown
VIII	**SCOM**	CO1	2	3	The student are able to understand and demonstrate basics of satellite communication and launching techniques	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO2	2	3	The student are able to provide in depth understanding of satellite operation and its space qualification.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO3	2	3	The student are able to provide in depth understanding of earth station technology.	More efforts will be taken to improve writing skills and to explore upcoming technologies.

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Department of Electronics and Telecommunication Engineering

		CO4	2	3	The student are able to understand and analyze satellite link design	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO5	2	3	The student are able to analyze various methods of satellite access.	More efforts will be taken to improve writing skills and to explore upcoming technologies.
		CO6	2	3	The student are able understand various applications of satellite communication and future trends.	The student are able to understand and demonstrate basics of satellite communication and launching techniques
VIII	PM	CO1	2	3	The student will be able apply selection criteria and select an appropriate project from different options.	More efforts required on Tutorials to improve writing skills.
		CO2	2	2.95	The student will be able to understand Project initiation process and documents required for it.	More efforts required on Tutorials to improve writing skills.
		CO3	2	2.95	The student will be able to write work break down structure for a project and develop a schedule based on it.	More efforts required on Tutorials to improve writing skills.
		CO4	2	3	The student will be able to identify opportunities and threats to the project and decide an approach to deal with them strategically.	More efforts required on Tutorials to improve writing skills and practice is required
		CO5	2	3	The student will be able to use Earned value technique and determine & predict status of the project.	The student will be able to use Earned value technique and determine & predict status of the project.
		CO6	2	2.95	Capture lessons learned during project phases and document them for future reference.	More efforts required on Tutorials to improve writing skills.

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References:
1. Course file I (Path: in the department)
2. Course Summary (path:\\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)

Activities undertaken for faculties and students

Sr.No.	Description	Resource Person	Date
1	Cell Phone / Tower Hazards and Solutions by Dr. Girish kumar, Professor IITB	Dr. Girish Kumar, IITB	18th July 2019
2	Optical Fiber Communication	Mr. Ashok Suryavanshi, Deputy Manager (Transmission), Faculty member at CETTM, MTNL, Powai	19th July 2019
3	Embedded, Automation & IoT	Mr. Asrar Khan, Senior Instructor, Prolific Systems and Technologies Pvt Ltd.	24th July 2019
4	Challenges in RealTime Networking Communication	Mr. Pratik Kadam, TCS, Mumbai	1st August 2019.
5	Drones & Its Applications	Mr. Siddhesh Naik, Sr. Design Engineer, LARSEN &TOUBRO ,Powai	9th August 2019
6	Workshop on Nano Satellite-Design and Development	Mr. Anshul Verma, Geekslab Technologies Pvt. Ltd. In association with AIESEC, IIT-Delhi	19th & 20th September, 2019
7	Industrial Visit to Hindustan Coca-cola Beverages Pvt. Ltd, Wada		11th October 2019

- ISTE/IETE approved STTP:

Sr.No.	**Topic**	**Resource Person**	**Date**
1.	Research with MATLAB and Simulink	Mr. Suraj Gawande, DesignTech, MATLAB Dr. Tatwadarshi Nagarhalli Assistant Professor, VIVA-TECH Mr. Nitin Rai Mr. Santosh Chapneri Prof , SFIT	6th November 2019 to 13th November 2019

EXTERNAL AUDIT REPORT

Year (2018-2021):

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
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Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

Academic Audit Report

2nd Jan 2023

Academic Audit for AY 2018-19, 2019-20, 2020-21, 2021-22 of Electronics & Telecommunication engineering department is conducted on 2nd January 2023 by external auditor.

It is based on code of conduct and actions taken in relation to continuous improvement.

Remarks by External Academic Auditor-

The following points were noted during the visit.

1. All files needs to be enclosed with summary sheet.
2. Last Audit report with actions taken need to maintained.
3. Reporting and action taken record need to be maintained by mentor. Make a case study of exceptional student case that shows facility/impact of mentorship by professional counselor.
4. Maintain the policy of BE projects and disseminate to student prior allocation of guides.
5. PO attainment record about BE projects need to maintained.
6. Need to update the record of students about higher studies.
7. Quality Research publications, IPR and consultancy projects need to be increased by faculties/students.

Department strength:

1. Teaching-learning records are maintained very well.
2. Self-learning of faculties through FDP/ NPTEL is appreciable.
3. Good student achievements.

Department weakness:

1. Collaborative Research publications and consultancy projects need to be increased by faculties/students.
2. Need to work towards faculty achievements.

02/01/2023

Dr. Sujata Kulkarni
Associate Professor, S.P.I.T, Mumbai

VIVA INSTITUTE OF TECHNOLOGY At: Shirgaon Post: Virar, Tal.: Vasai, Dist. Palghar VIRAR (EAST)

02-01-2023

Principal
VIVA Institute of Technology

Prof. Archana Ingle
HOD EXTC Dept, VIVA Institute of Technology

02/01/23

Prof. Karishma Raut
NBA/NAAC Coordinator EXTC Dept, VIVA Institute of Technology

1) Madhura Ranade
2) Ashwini Hayan
3) Ratik Parsewar
4) Meena Perla
5) Nutan Malekar

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VIVA Institute of Technology

Approved by AICTE, New Delhi, DTE, Government of Maharashtra
And Affiliated to University of Mumbai

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VIVA Institute of Technology

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and Affiliated to University of Mumbai

Ref. No. : VIVA / VIT / 3008 / 2022-23

Date : 02/01/20

Certificate of Appreciation

This is to certify that **Dr. Sujata Kulkarni**, Associate Professor, Electronics and Telecommunication Engineering Department, SPIT, Andheri(West) conducted academic audit on 2nd January 2023 of Department of Electronics and Telecommunication Engineering.

We are very much thankful to her for valuable suggestions for the growth of department and institute.

I hope similar support in future too.

Shirgaon
Tal. Virar,
Tal.: Vasai,
Dist. Palghar
VIRAR (EAST)

Principal

Re
Dr. Sujata K

Year (2017-18):

Late Shri Vishnu Waman Thakur Charitable Trust's
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Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Electronics and Tele-Communication Department

Audit for AY 2017-2018 **Date: 06/10/2018**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	75 to 85 %	For Defaulters : written work and extra to come during PL
2	Coverage of syllabus	90-100 %	Records are maintained in the course file.
3	Student feedback	Faculty as well as facility feedback taken	Records are maintained.
4	Continuous Evaluation	• Monthly syllabus Completion • Semester wise and Subject wise Orientation • Mentors • Remedial Lectures • Fortnightly meeting	It is Suggested to maintain attendance record as well as report of orientation program.
5	Quality of Unit test paper	• 70 to 80% Change • All CO's are covered • As per university pattern	Appropriately done
6	Analysis of University result 48.14 | 73.68 | 92.30 62.74 | 86.30 | 94.87	Overall good Result. Records are maintained.	Need to improve SE result.
7	Remedial classes	Remedial lectures are taken for • ATKT students • UT result improvement	Records are maintained.
8	Seminars/ guest lecture	Total 5 guest lectures has been conducted.	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
9	Industrial Visits	Two Industrial Visits has been arranged.	
10	Workshops	One workshop has been arranged annually.	
11	Student counseling	Mentor system is implemented with ratio of 1:20. Parent teachers meeting has been conducted annually.	Records are maintained.

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12	Faculty Development Programs	2 STTP had been conducted. ISTE and IETE approved.	Records are maintained.
13	Infrastructure	Appropriate Infrastructure -3 classrooms -9 labs -3 Projectors	Proper maintenance is done on regular basis.
14	Self-Learning resources	Following Initiative has been taken by the department • Google Classroom • NPTEL Video lectures • Virtual lab • Department Library • You tube channel	Good efforts. Records are maintained.
15	Student Participation	• Participation in NCRENB is compulsory for students • Good no. of prizes in other colleges	Student Achievements are appreciable.
16	Internal Quality Assurance	• Presentation • Aptitude lectures • Mini projects intercollege showcase • NIRMAN Bridge course • Flip class • Role play	Activities conducted in department are really appreciable.
17	Placement	Total 10 placements had been done.	More efforts required.
18	Student – Teacher Ratio	1:20.82 odd sem 1:19.12even sem	-
19	Unique features of Department	• Extc you-tube channel • Nirman Bridge course • Auto Rickshaw meter testing • Contribution to NCRENB • Aptitude test • I.V. for faculty.	Good Initiative
20	Newsletter/ Magazine	• VIVA-Converge annual magazine • Annual Newsletter	Records are maintained.

Remarks

- Very good and properly maintained files
- Very good initiative like NIRMAN, calling defaulters, semester wise orientation program, Remedial lectures for ATKT students.

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- Generates revenue for the college from auto Rickshaw meter testing. It is requested to bifurcate the revenue for motivation and recognition of the efforts among staff.
- Well experienced staff in the department.
- IETE professional body in the department.
- Activities taken for internal quality improvement is appreciable.
- Efforts taken by all the staff of EXTC department are very nice and appreciable.

VIVA INSTITUTE OF TECHNOLOGY VIVA VIRAR

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Niyati Raut (HOD Mech)

Prof. Lissy Jose (HOD CIVIL)

Prof. Karishma Raut (NAAC coordinator)

Prof. Tatwadarshi P. N (AP Comp)

Prof. Prashant Pawar (AP FE)

Prof. Anojkumar Yadav (AP Electrical)

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2017-18

Academic Audit for AY 2017-18 Odd semesters carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1 Teaching & Learning Process

SEM	Subject	No. Of available hours	No. Of hours engaged	Short fall	Corrective action	Innovation in teaching method
III	AM-III	50	50	--	--	--
	EDC-1	44	44	--	--	Use of Google Classroom to provide softcopy of reference books, notes, university question papers and practical write-ups. Videos are used for better understanding of related topics.
	DSD	45	37	08	Syllabus completed by showing PPT.	Use of video lectures for better understanding.
	CTN	43	40	03	Lectures taken in tutorials.	Use of Google Classroom for reference real world examples to understand concepts.
	EIC	47	44	03	Syllabus covered in tutorials	Use of google classroom for softcopy and also some video lectures
V	IC	43	44	--	--	Google classroom was used to provide softcopy of books. Practice of numerical was taken through assignments.
	MA	41	42	--	--	Use of Google Classroom to provide softcopy of notes. Real time examples are given for better understanding.
	AC	41	37	04	Syllabus covered in conducted lectures and practicals.	Used Google classroom.
	RFMA	46	45	01	Topics covered with presentations and tutorial	Use of Google Classroom to provide softcopy of reference books. PPTs and videos are used for better understanding of related topics.
	RSA	45	40	05	Syllabus covered in conducted lecture and tutorial time.	Better understanding of concepts with real life examples of probability.

Department of Electronics and Telecommunication Engineering

	BCE	21	19	02	--	--
VII	IVP	45	45	--	--	Reference books and notes shared on Google Classroom. Use of Animation videos to provide better understanding of concepts of image and video.
	MC	45	45	--	--	Use of Google Classroom to provide softcopy of reference books and notes. PPTs, animated videos and use of virtual lab for better understanding of related topics.
	OCN	45	39	06	Syllabus covered in practical and notes given.	Use of Google Classroom to provide softcopy of reference books. PPTs and videos are used for better understanding of related topics
	MRE	42	40	02	Syllabus covered in conducted lectures.	Google classroom was used to provide notes and books to students. Numericals on radars were taken as practice.
	DCE	42	46	--	Extra lectures taken	Used PPT to demonstrate image and video compression, concepts of biometric and also provided reference notes on Google classroom. Animated videos are used for better understanding.

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
III	EDC-I	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	Few CROs and Power Supplies not working; need to be repaired or ordered
	DSD	6 Digital Trainer Kit. Computer lab with 20 PCs with VHDL software	6 Digital Trainer Kit. Computer lab with 10 PCs with VHDL software	Digital Trainer Kit need maintenance
	OOP	Pcs and java development kit application	Pcs and java development kit application	NONE
V	CEL-II (IC, RFMA)	IE3D, Antenna trainer kit, CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	Antenna trainer kit, NEC2, RFSIM99 CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components, Computer lab with 20 PCs with PSpice circuit simulator.	Few CROs and Power Supplies not working; need to be repaired or ordered.
	CEL-I (AC)	Modulation Trainer kit.	Modulation Trainer kit.	Few Modulation Trainer kit not working; need to be repaired or ordered.
	MAL	8051 trainer kit and Interfacing cards and software is available.	8051 trainer kit and Interfacing cards and software is available.	--
	Mini Project-I	EAGLE software,PCB,etching machine,etching solution,PCs	EAGLE software,PCB,etching machine,etching solution,PCs	--
VII	IVPL	Computer lab with 20 PCs and Matlab/scilab	Computer lab with 20 PCs and Matlab/scilab	MATLAB license renewal in process
	ACEL-I (MC)	Computer lab with 20 PCs and Matlab	Computer lab with 20 PCs and Matlab	MATLAB license renewal in process
	ACEL-II (OCN, MRE)	Optical fiber trainer kits and Software for optical network	Optical fiber trainer kits	Software for optical networks is required
		-	Microwave Test Bench.	-
	DCEL	Computer lab with 20 PCs and Matlab/scilab	Computer lab with 28 PCs and scilab.	MATLAB license renewal in process

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Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
III	Electronics Devices & Circuits - I	CO1	2	0.56	Students are able to understand various types of passive component and physical operation of diode	Student must be motivated to improve writing skills
		CO2	2	0.49	Students are able to analyse, design rectifiers, filters and Zener voltage regulator	More numerical practice can be taken through tutorials. Video lectures
		CO3	2	0.56	Students are able to understand dc modelling, analyse and design of BJT,FET circuits	Laboratory exercises need to conduct for understanding. More numerical practice needed
		CO4	2	0.33	Students are able to understand small signal model and analysis of BJT, FET amplifier	More numerical practice needed for different configurations
		CO5	2	0.32	Students are able to determine frequency response of BJT & FET amplifier	Laboratory exercises need to conduct for understanding. More numerical practice needed
		CO6	1.67	0.33	Students are able to design single stage RC coupled CE and CS amplifier	More numerical practice can be taken through tutorials
III	Circuit theory and networks	CO1	2	0.48	Students are able to analyse DC and AC circuits	More examples required
		CO2	3	0.52	Students are able to understand network topologies and graph theory for analysing circuits	More examples required
		CO3	3	0.51	Students are able to evaluate time and frequency domain responses of RL,RC,RLC circuits	More practical examples required
		CO4	2	0.51	Students are able to understand driving point and transfer functions and stability of circuits	More practice required
		CO5	3	0.43	Students are able to understand two port networks and different parameters used for analysis	More practice required
		CO6	2	0.44	Students are able to synthesis RLC circuits	More practice required
III	Electronic Instrumentation and Measurement	CO1	2.33	0.33	Students were able to understand basics. The definitions were a bit tough to memorize	Real life examples like mega ohm bridge and a situation of measurement was given
		CO2	2	0.34	The working of transducers was very simple though practical is missing	Some selected transducers were shown to students to explain working
		CO3	2	0.4	Telemetry and data acquisition system have block diagram which were tough to memorize	The real world examples were discussed to bring more awareness of process
		CO4	2.5	0.31	The block diagram reduction critical rules were a bit tough to understand	Diagrammatic way of drawing helped them to understand the rules
		CO5	2.5	0.3	Time domain analysis was simple but root locus was a bit tricky for students	A way of remembering steps of root locus was made and explained
		CO6	2.5	0.24	Frequency domain analysis was very lengthy	The methods were explained with video lectures
III	Applied Mathematics-III	CO1	2	0.34	Able to understand Laplace transform I Standard function and analyses methods, and application	Taking more examples depend on all terms in Laplace transform
		CO2	2	0.32	Able to understand inverse Laplace transform II and application	Taking more examples depend on all terms in inverse Laplace transform
		CO3	3	0.29	Students were Able to determination of Fourier coefficient, expansion of Fourier series depend on different intervals,analyse complex form of fourier series on integrals and Fourier transform	Real world examples related to fourier series and fourier transform
		CO4	2	0.4	Ability to understand and analyse vector algebra, vector differential and integration	Implemented by taking application of vectors in algebra, differential
		CO5	2.5	0.34	Ability to understand and analyse vector integration	Implemented by taking application of vectors in integration

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		CO6	2.25	0.43	Student will able to understand Ability to understand vector algebra and analyse the analytic function ,mapping in complex variable and able to understand bessels function	Taking more examples depend on this
III	Digital System Design	CO1	3	1.37	Able to distinguish between analog and digital signals & data	Latest application areas must be studied and more practice is required for understanding the statistics of it Student must be motivated to improve writing skills
		CO2	3	1.37	Able to analyse, transform & minimize combination logic circuits	More practice is required and Student must be motivated to improve writing skills
		CO3	3	1.37	Able to design and analyse sequential circuits	Latest application areas must be studied and more practice is required for understanding the statistics of it
		CO4	3	1.14	Able to understand classification and characteristic of memory	More practice is required and Student must be motivated to improve writing skills
		CO5	2	1.12	Able to design digital system and components using Programmable logic devices	More practice is required and Student must be motivated to improve writing skills
		CO6	3	1.13	Able to design digital system and components using Programmable logic devices	More practice is required and Student must be motivated to improve writing skills
V	Microcontroller & Applications	CO1	2	0.34	Students were able to able to draw and describe architecture of 8051 microcontroller	Need of Case studies for practice
		CO2	2	0.33	Students were able to write assembly language program for 8051 microcontrollers	More practice for programming is required
		CO3	2	0.48	Student got the knowledge about interfacing various peripheral devices to the 8051 microcontroller	Exposure to recent advances in controllers
		CO4	2	0.22	Students were able to draw and describe architecture of ARM7 microcontroller	Real time applications of ARM7 need to discuss
		CO5	2	0.49	Students were able to write assembly language program for ARM7microcontrollers	More practice for programming is required
		CO6	1.5	0.49	Students were able to design microcontroller based system for various applications	Need of Case studies for practice
V	Random Signal Analysis	CO1	3	2.103	Students were able to solve basics problem on probability	More numerical should be taken
		CO2	3	2.059	Students were able to understand 1 dimensional random variable	More numerical should be taken
		CO3	3	2.100	Student got the knowledge about multi-dimensional random variable	More numerical should be taken
		CO4	3	2.098	Students were able to understand probability expectation	More numerical should be taken
		CO5	3	2.015	Students were able to solve numerical on random process	More numerical should be taken
		CO6	3	2.095	Students were able to understand and solve markov chains	More numerical should be taken
V	RF Modelling and Antennas	CO1	2	2.083	Students are able to understand the hazards of Electromagnetic radiations and are able to understand high frequency behaviour of active and passive components. Students need to be able to put their understanding of fundamentals in more specific words	More practice of writing the answers must be taken, through classwork or tutorials
		CO2	3	2.078	Students are able understand the need of RF filters and they understand designing of different types of passive filters. However, students need to carefully read the given problem	Need more practice to solve the sums
		CO3	3	2.088	understanding fundamental concepts of antenna	More examples needed
		CO4	2	2.164	Students understood Radiation phenomena and pattern of various antennas	More practice is needed

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		CO5	3	2.107	Understanding different types of antenna arrays, its application and designing of antenna arrays	More examples can be used for understanding
		CO6	2	2.124	Students are able to understand special types of antennas, their characteristics and applications	More practice of writing the answers must be taken through classwork or tutorials
V	INTEGRATED CIRCUITS	CO1	2	0.568	Understood the basics of op-amp in detail with parameters	More practical approach is required for better understanding
		CO2	2	0.576	Learnt different op-amp applications and design	Real life examples need to be introduced related to applications
		CO3	2	0.574	Students understood the working of non-linear applications of op-amp	Real life examples need to be introduced related to applications
		CO4	2	0.574	Students understood the working of special purpose integrated circuits with block diagram	More practical approach can be used for understanding
		CO5	2	0.49	Students understood the designing of Voltage regulators	More practice for designing of regulator IC is required
		CO6	2	0.49	Students understood the counters, shift registers and ALU with logic diagram and applications	Application wise explanation is required
V	Analog Communication	CO1	2	2.98	Students were able to understand different noises in communication system and basics of analog communication	Set higher target level
		CO2	2	2.98	Students got the knowledge of AM modulation technique	Set higher target level
		CO3	2	2.98	Student got the knowledge of angle modulation technique	Set higher target level
		CO4	2	2.93	Students were able to describe sampling technique and use it in modulation process	Set higher target level
		CO5	2	2.89	Students were able to draw and explain analog pulse modulation technique	Set higher target level
		CO6	2	2.89	Students were able to explain digital modulation technique	Set higher target level
V	BUSINESS COMMUNICATION AND ETHICS	CO1	2.25	2.82	Able to communicate confidently at all level	Set higher level for up gradation
		CO2	2.5	2.81	Able to gain success in interviews and other competitive examinations	Set higher level for up gradation
		CO3	2.66	2.83	Able to achieve life-long learning and business approach	Set higher level for up gradation
		CO4	2.33	2.82	Able to inculcate understanding the impact of engineering on community	Set higher level for up gradation
VII	Image and Video Processing	CO1	3	0.33	Students are able to understand the fundamentals and need of image processing and are able to convert images in different color models	Students need to be able to put their understanding of fundamentals in more specific words. Classwork and Oral are taken during practical sessions.
		CO2	3	0.41	Students are able to understand the need of image transforms and are able to choose and perform transform for suitable application. However, students need to perform mathematical operations faster.	Need more practice to solve transforms mathematically correct
		CO3	2	0.53	Students are able to understand different image processing techniques in Spatial and frequency domain. They are able to perform image processing techniques related to histogram.	More practice needs to be taken
		CO4	3	0.45	Students are able to understand the need of segmentation and perform different types of segmentation techniques and transforms. Students need to perform morphological techniques mathematically correct on binary images.	More practice needed to correctly apply the transforms.
		CO5	2	0.49	Students are able to understand the difference between image restoration and image enhancement. They need more practice to perform image restoration using different models and filters.	More practice needs to be taken
		CO6	3	0.57	Students are able to understand the fundamentals of video acquisition, formats and video signal processing. Students need better usage of	Students need to be able to put their understanding of fundamentals in more specific and correct words.

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					technical language while writing answers	Classwork and Oral are taken during practical sessions
		CO7	2	0.49	Students are able to understand fundamentals of motion estimation along with different algorithms	More applications must be introduced to provide better understanding
VII	Mobile Communication	CO1	1.67	1.21	Students are able to understand the concept of Mobile radio propagation, cellular system design But need to improve in writing skills	Must be guided for proper representation and content for improvement in writing skills
		CO2	3	1.22	Students are able to understand GSM, CDMA concepts and architecture, frame structure, system capacity, services provided	Must be guided for proper representation and content for improvement in writing skills
		CO3	2	1.21	Students are able to understand evolution of mobile communication generations 2G, 2.5G, 3G with their characteristics and limitations	Must be guided for proper representation and content for improvement in writing skills
		CO4	2.5	0.96	Students are able to understand network structure of 3 GPP in detail	Must be guided for proper representation and content for improvement in writing skills
		CO5	2.33	1.21	Students are able to understand emerging technologies required for fourth generation mobile systems such as SDR, MIMO etc	Must be guided for proper representation and content for improvement in writing skills
		CO6	2.75	1.13	Students are able to understand different indoor and outdoor propagation models related to losses and different types of fading	Must be guided for proper representation and content for improvement in writing skills
VII	Optical Communication and Networks	CO1	2	0.53	Students will be able to understand the fundamentals principles of optics and light wave to design optical fiber communication	Real time examples, applications and detailed study with practice is required
		CO2	2	0.57	Systems	Detailed study with practice is required
		CO3	2	0.41	Students will be able to understand and identify structures, functions, materials, and working principle of optical fiber and degradations in them/losses in optical fiber cable	Live examples and more practical knowledge is required
		CO4	2	0.57	Students will be able to understand light sources, couplers, detectors, and multiplexers	Understanding of optical link and optical components in optical networks is needed
		CO5	2	0.53	Students will be able to understand design optical fiber communication links using appropriate optical fibers	Application of network with deep understanding is required
		CO6	2	0.57	Students will be able to understand concepts of designing and operating principles of modern optical communication systems and networks	More applications and there use needed to apply in real time
VII	Microwave and Radar Engineering	CO1	2.5	1.33	Students are able to understand the basics of microwave, its applications, waveguides and its mode analysis and different microwave components	Students needs to improve their writing skills
		CO2	3	1.29	Students are able to understand the need of impedance matching and tuning in microwave	More practice is needed
		CO3	2	1.24	Students are able to understand the different microwave sources and amplification process	we can explain working of different tubes with the help of different simulations
		CO4	2	1.39	Students are able to understand the different semiconductor microwave devices and its performance characteristics	Module wise tutorials can be introduced
		CO5	2	1.34	Students will are to understand the basics of Radar including different types, radar displays and clutters	Writing skills needs to be improved
		CO6	2	1.37	Students are able to understand the applications of microwave in area like bio-medical and remote sensing radar used in navigational aids	Needs to improve the writing
VII	Data Compression and Encrypti	CO1	2	1.39	Students are able to understand need of data compression and implement different text compression techniques But need to improve writing skills More practice is required	Student must be motivated to practice methods and improve writing skills
		CO2	2	1.39	Students are able to understand audio compression	Student must be motivated to improve writing skills

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	on	CO3	2	1.39	Students are able to interpret different images and apply operations to compress them. More practice is required	We can introduce them about latest image and video processing methods and need to improve writing skills
		CO4	2	1.35	Students are able to understand modular arithmetic and implement symmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills
		CO5	2	1.39	Students are able to understand number theory and implement asymmetric key cryptography schemes. More practice is required	More practice can be taken and need to improve writing skills
		CO6	2	1.39	Students are able to understand network security and ethical hacking	Scope of all these topics can be increased for better understanding and need to improve writing skills

References:

1. Course file I (Path: in the department)
2. Course Summary (path: \\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)
3. Attainment level and result analysis

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Department of Electronics and Telecommunication Engineering

Academic Audit Report
AY 2017-18

Academic Audit for AY 2017-18**Even** semester is carried out by internal audit committee of Electronics & Telecommunication engineering.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1(b): Teaching & Learning

SEM	Subject	No. Of available hours	No. Of hours engaged	Shortfall	Corrective action	Innovation in teaching method
IV	AM-IV					Use of Google Classroom
	EDC-II	43	43	-	-	Use of Google Classroom to provide softcopy of reference books, notes, university question papers and practical write-ups. Videos are used for better understanding of related topics.
	LIC	43	41	02	Lectures covered in hours received.	PowerPoint presentations and use of video lectures.
	SS	46	47	--	--	Use of Google classroom. Virtual Lab experiments conducted And More practice is given during tutorials.
	PCE	40	40	--	--	Use of Google classroom, PowerPoint presentations.
VI	DCOM	41	41	-	-	More numerical and class work was done for practice
	DTSP	38	40	--	--	Google classroom was used for giving assignments and other material.Online quiz was also taken using google quiz.
	CCN	42	43	--	--	Use of Google classroom PowerPoint presentations.
	TV	40	41	--	--	Use of Google

						classroom, PowerPoint presentations, Videos are used for better understanding of related topics
	OS	38	38	--	--	More numerical and class work was done for practice. Video lectures were used for better understanding.
	VLSI	39	42	--	--	Video Lectures and animations for explanation of working of MOSFET.
VIII	SCN	45	48	--	--	Animation explaining the orbital movements of satellite are used for better understanding.
	WN	45	45	--	--	Assignments and class test were conducted for practice and understanding the topics.
	TNM	45	44	01	Covered in practicals	Use of Google classroom,video and animations for better explaination.
	IVC	45	48	--	Used PPT to save time and notes uploaded for reference on Google classroom.	Animated Videos are used for important topic for better understanding Flip class and Role play is used to improve understanding

Table 2: Learning Resources

SEM	Subject	Required lab facilities	Available lab facilities	Remarks
IV	EDCL-II	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	CRO, Function Generator, Power Supply, Digital Multimeters, Bread Boards, Components	Few CROs and Power Supplies not working; need to be repaired or ordered
	LICL	Multimeter,Cro,IC 741	Cro and multimeter	Quality 741 IC is required.
	PCEL	Communication kits	-	-

VI	CEL-III (DCOM ,CCN)	CRO & Modulation And Demodulation Kits	CRO & Kits	Demodulation Kits need to be repaired
		RJ45 Socket, Cat 5 Cable, Crimping Tool	Computer lab with 20 PCs and software(packet tracer and NS2)	-
	CEL-IV (TV, VLSI)	TV sets	Pattern Generator	-
		20PCs with Microwind Lite	-	-
	Mini Project -II	20pcs,EAGLE software,PSpice,PCB making liquids	-	-
	DTSP	Computer lab with 20 PCs with SCILAB	Computer lab with 20 PCs with SCILAB	-
VIII	SCNL	Computer lab with 20 PCs with MATLAB, 4 Satellite communication Trainer kit.	Computer lab with 20 PCs, 4 Satellite communication Trainer kit.	MATLAB license renewal in process
	WNL	Computer lab with 20 PCs with NS2.	Computer lab with 20 PCs with NS2.	RFID. Bluetooth modules are required.
	TNML	Computer lab with 20 PCs with NS2.	Computer lab with 20 PCs with NS2.	
	SPL			
	IVCL	Computer lab with 20 PCs and packet tracer, virtual box,opencv-python, cisco router, cisco switches, cisco IP phone, RGB camera	Computer lab with 20 PCs and packet tracer, virtual box,opencv-python, cisco router, cisco switches, cisco IP phone, RGB camera	One more IP phone is required

Table 3: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
IV	AM-IV	CO1	3	0.5644	demonstrate basic knowledge of Calculus of variation in Euler Langrange equation, Functions involving higher order derivatives : Rayleigh-	Taking more examples depend on all terms in variation

					Ritz method	
		CO2	3	0.51	Able develope Vectors in n-dimensional vector space, Metric spaces , Norms and normed vector spaces, Inner products and innerproduct spaces,The Cauchy-Schwarz inequality, orthogonal Subspaces, Gram-Schmidt process.	Real world examples related to vectors
		CO3	3	0.4844	Able to understand matrix theory Characteristic equation, Eigenvalues and Eigenvectors , Cayley-Hamilton theorem , Diagonalisation , derogatory and non-derogatory matrices	Taking more examples depend on this.
		CO4	3	0.5644	Ablity to understand the Random variable , and able to find the probability distribution.	Implemented by taking application of complex integration
		CO5	3	0.5644		Implemented by taking application of complex integration
		CO6	2.5	0.43	Ablity to understand the concept of correlation and regression . Demonstrate an ability to identify problems in the field of Electronics and Telecommunication and solve it.	Implemented by taking application of complex integration.
IV	EDC-II	CO1	2	0.56	Students are able to understand basic operation of MOSFET and its design.	Student must be motivated to improve writing skills.
		CO2	2	0.488	Students are able to understand the operation of multistage amplifier using BJT and FET in various configuration. Also able to determine frequency response and voltage gain	More numerical practice can be taken through tutorials. Video lectures
		CO3	2.33	0.486	Students are able design multistage amplifier for a given specifications.	More numerical practice needed.

		CO4	2	0.566	Students are able to	More numerical practice needed for different configurations.
		CO5	2	0.526	Students are able to understand concept of feedback amplifier and their characteristics.	Laboratory exercises need to conduct for understanding. More numerical practice needed.
		CO6	2	0.526	Students are able to design the different oscillator circuits for various frequencies.	More numerical practice can be taken through tutorials.
IV	PCE	CO1	2	2.16	Students are able to understand basic operation of MOSFET and its design.	Student must be motivated to improve writing skills.
		CO2	2	2.09	Students are able to understand the operation of multistage amplifier using BJT and FET in various configuration. Also able to determine frequency response and voltage gain	More numerical practice can be taken through tutorials. Video lectures
		CO3	2.33	2.09	Students are able design multistage amplifier for a given specifications.	More numerical practice needed.
		CO4	2	2.17	Students are able to	More numerical practice needed for different configurations.
		CO5	2	2.13	Students are able to understand concept of feedback amplifier and their characteristics.	Laboratory exercises need to conduct for understanding. More numerical practice needed.
		CO6	2	2.13	Students are able to design the different oscillator circuits for various frequencies.	More numerical practice can be taken through tutorials.
IV	SS	CO1	1.4	0.54	Students are finding difficulty to find out easiest method of solution for university exam questions and also finding difficulty in attempting, due to lengthy and complicated calculation of Fourier Series and Fourier Transform of CT and DT signals.	More practice is required. Module wise Tutorials can be introduced.
		CO2	2	0.54		
		CO3	2.8	0.57		
		CO4	2.8	0.56		
		CO5	2.8	0.45		

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Department of Electronics and Telecommunication Engineering

		CO6	2.8	0.56		
IV	LIC	CO1	**2.66**	0.4436	Students were finding difficulty in understanding basics of op-amp	Practical sessions was involved to bring more depth in concepts
		CO2	**2.66**	0.4484	The initial applications of opamp was easy and students understood it	The working of opamp as comparator and analyzing it instant by instant helped them to get output graph
		CO3	**2.66**	0.4044	Non linear applications of Opamp was a little tough for students	Opamp as comparator working helped them to understand the concepts
		CO4	**2.66**	0.5656	The A to D converters was a bit tough to understand for students	The pin configuration was given special pointer tags to remember and hence its working
		CO5	**2.66**	0.4856	Timer IC operation was a bit difficult for students to understand	The working of regulator IC was demonstrated with the help of practical.
		CO6	**2.66**	0.3636	Regulator IC designing was tough for some students	Practical sessions was involved to bring more depth in concepts
VI	DCOM	CO1	**1**	2.85	Students are able to understand the basics of information theory and coding techniques.	Solved different numerical on coding technique with examples, set high target level
		CO2	**2**	2.77	Students are able to determine the minimum number of bits per symbol required to represent the source and the maximum rate at which a reliable communication can take place over the channel.	Set higher target
		CO3	**2**	2.72	Students are able to determine methods to mitigate inter symbol interference in	Practical application was thought for ISI

Department of Electronics and Telecommunication Engineering

					baseband transmission system.	
		CO4	3	2.76	Students are able to describe and determine the performance of different waveform techniques for the generation of digital representation of signals	Different modulation techniques were compared
		CO5	3	2.92	Students are able to describe and determine the performance of different error control coding schemes for the reliable transmission of digital representation of signals and information over the channel.	Multiple numerical were solve by students
		CO6	2	2.89	Students are able to understand various spreading techniques and determine bit error performance of various digital communication systems.	Set higher target
VI	DTSP	CO1	1	2.1	Students were able to use Z transform to analyze a digital system.	Solve different numerical on transform analysis, set high target level
		CO2	2	2.02	Students were able to understand DFT,FFT and its applications.	Set higher target level.
		CO3	1	2.02	Students were able to design and simulate finite and infinite impulse response filters for various applications.	Set higher target level.
		CO4	2	2.1	Students were able to change and modify sampling rates.	Different modulation techniques were compared
		CO5	1	1.85	Students were able to understand recover of information from signals.	Set higher target level.
		CO6	1	2.01	Students were able to design and test signal processing algorithm for various applications.	Set higher target level.
VI	CCN	CO1	2	2.89	Students are able to understand the network architecture and protocol layers and service models	Set higher attainment level
		CO2	2	2.73	Students are able to	Set higher attainment

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Department of Electronics and Telecommunication Engineering

					understand the different application layer protocols	level
		CO3	2	2.89	Students are able to understand the transport layer principle and implementation of these principles in existing protocols	Set higher attainment level
		CO4	2	2.89	Students are able to understand how exactly network layer implements the host to host communication service and subnetting	Set higher attainment level
		CO5	2	2.89	Students are able to understand different data link layer devices and data link layer protocols.	Set higher attainment level
		CO6	2	2.89	Students are able to understand different networking devices used at physical layer and multiplexing techniques	Set higher attainment level
VI	TV	CO1	3	2.09	Students are able to understand basics of picture transmission and reception	More examples needed for better understanding.
		CO2	2	1.96	Students are able to understand basics of colour	More practice needed.
		CO3	2	2.18	Students are able to understand different concepts of digital TV	Set higher target level
		CO4	3	2	Students are able to understand advanced TV systems including MAC and DTH	More practice needed.
		CO5	3	2	Students are able to understand HDTV system and standards of HDTV	Case studies given for better understanding of HDTV standards.
		CO6	2	2.18	Students are able to understand principle, working of different displays used in TV	Set higher target level
VI	OS	CO1	3	2.972	The introduction part was simple to understand.	More live examples with videos are needed.
		CO2	2	2.97	The concepts of process and memory management was understood	Need more graphical representation of processes
						Need more graphical

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Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

						processes
		CO4	3	2.968	The most secure operating system.	Need practical for this module
		CO5	2.5	2.964	The commands were simple to understand	Need practical for this module
		CO6	2.3	2.928	The concept of RTOS was understood by live examples	Need more graphical representation of processes and practical.
VI	VLSI	CO1	2	0.37	Students are able to understand working and fabrication process of MOSFET	Difference between BJT and FETs get cleared
		CO2	2	0.48	With the help of characteristics of different types of inverter and difference between ideal and practical inverters analyzed	More problems has to be taken to get clear understanding of inverter.
		CO3	1.5	0.40	Students design different type's sequential and combinational circuits using CMOS.	More circuits and circuit layout designing has to be practice
		CO4	2	0.44	Students will get different types of semiconductor memories and their characteristics	Case study of semiconductor memories for better understanding of memories.
		CO5	2	0.40	Design different types of circuits (Adders, Shift registers, Multipliers) using MOSFET.	Share some video and animations of adders and shift registers
		CO6	2	0.24	Students are able to understand Importance of VLSI clocking and power distribution system	Case study for better understanding of power distribution system
VIII	SCN	CO1	2	2.05	Students are able to understand fundamentals of orbital mechanics, launch methods, applications of satellite communication in daily life and to identify the characteristics of orbits & types of orbits.	Set Higher Target.
		CO2	2	2.17	Students are able to understand various techniques of controlling the orientation of satellite, understanding of parameter exchange between	Set Higher Target.

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Department of Electronics and Telecommunication Engineering

					satellite and earth station and equipment's carried by satellite.	
		CO3	3	**2.09**	Students are able to make a link power budget depending on losses in space and gains of receiver-transmitter antennas. They will be able to modify received power equation depending on parameters that effect uplink or downlink.	Need more practice to solve link power budget mathematically correct.
		CO4	2	**2.17**	Students are able to determine and explain the design considerations of earth station. They will have understanding of types of earth stations and their applications.	Set Higher Target.
		CO5	2	**2.17**	Students are able to explain methods of accessing the space segment along with their types. They will be able to calculate frame efficiency of a TDMA frame and will gain understanding of principles on which all the accessing methods work.	Set Higher Target.
		CO6	2	**2.05**	Students are able to relate the networking principles for satellite communication through reference models and will be able to understand the types of connectivity between satellite networks along with use of optical technology for satellite communication.	Set Higher Target.
VIII	**WN**	CO1	2	2.09	Students learnt the evolution of technologies from 1G to LTE	Live examples are required for better understanding.
		CO2	2	1.96	Students learnt the planning and design concepts of WAN through different numerical examples.	More assignments and practice is required for numerical examples.
		CO3	2	2.12	Student found this module very interesting as it contains	Video and demo lectures are required for

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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
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Department of Electronics and Telecommunication Engineering

					daily life technologies.	technologies included in this module
		CO4	2	2.09	Students got the overview of wireless sensor networks but found it difficult to understand.	Video lectures are required for better understanding of WSN and its applications.
		CO5	2.33	2.08	Students understood the middleware principles, architecture and network management.	A practical approach is required.
VIII	TNM	CO1	2	1.97	The students were able to focus on Basics of Telecomm Networks	Practical Demonstration is required
		CO2	2	2.00	The student were be able to understand OSI model standards	
		CO3	2	1.88	The student will be able to name and understand services offered by SNMP protocols	
		CO4	2	1.97	The student will be able to understand ATM and other services	
		CO5	2	2.05	The student will be able to understand Application of TNM	
		CO6	2	2.09	The student will be able to understand TNM architecture in detail.	
VIII	IVC	CO1	2	1.38	The students are able to understand working of global internet. Also they are able to design subnets. They are aware of various audio/ video compression methods. They worked on VOIP. Conceptually sound students but lags in presenting it theoretically.	More efforts on Practical Demonstration and must be motivated to write tutorials to improve writing skills
		CO2	2	1.34		
		CO3	2	1.38		
		CO4	2	1.26		
		CO5	2	1.30		
		CO6	2	1.37		

References:
1. Course file I (Path: in the department)
2. Course Summary (path:\\bee\EXTC DEPT\NBA\CRITERIA 3\Course summary)

Activities undertaken for faculties and students

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Department of Electronics and Telecommunication Engineering

Sr.No.	Description	Resource Person	Date
1	Basics of Timer Interrupts and ARM Processor	Mr.Amol Sakhalkar (Proprietor,M/s.Digel systems)	10th Aug. 2017
2	Recent Trend in Embedded System	Mr.Nayan Mestry (CEO,NM Technocrafts)	16th Aug. 2017
3	Wireless Networks	Mr.Rahul Shinde (Wireless Network lead,Tech Mahindra)	16th Feb. 2018
4	Robotics	Mr.Amit Bhagawat (Product Engineer at Robertshaw Controls P.L)	23rd Feb.2018
5	A glance through copyrights & patents	Ms.Rujuta Kambali (TATA Trusts Consultant)	13th Sept. 2017
6	Industrial Visit to All India Radio, Mumbai	BE and TE	19th Jan 2018
7	Industrial Visit to Yashna Circuits, Jogeshwari	SE	16th Feb 2018
8	Workshop on Image processing using MATLAB	Mr.Thayyal	7th and 8th Sep.2017

- ISTE/IETE approved STTP:

Sr.No.	Topic	Resource Person	Date
1.	VLSI Design & Embedded Systems	1. 2.Mr.Nayan Mestry (CEO,NM Technocrafts) 2.Mr.Abhilash Panicker (Asst.Manager,RS components & Control Ltd.) 3. Mr.Rajendra Babar (Professor,SIT lonavala) 4.Prof.Pratik Parsewar (VIVA Institute of Technology)	2nd Jan.– 6th Jan. 2018

2.	Recent Applications using OpenCV & Python Programming Language	1.Mr.Siddharth Shah (CEO,Fafadia Tech) 2.Mr.Nayan Mestry (CEO,NM Technocrafts) 3.Mr.Kalind Karia (IIT Bombay) 4. Mr.Sanam Shakya (IIT Bombay) 5. Vivek Sabanwar (IIT Bombay) 6.Mr.Dyaneshwar Babad (VIVA Institute of Technology)	25th June – 29th June 2018

EXTERNAL AUDIT REPORT

Year (2017-18):

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Department of Electronics and Telecommunication Engineering

Date: 23/10/2018

Academic Audit Report
AY 2017-18

Remarks by External Academic Auditor-

The following are the observations for the external academic audit that took place on Tuesday, 23rd October 2018 for the Electronics & Telecommunication Engineering Department in Viva Institute of Technology, Virar.

1. All labs are conducted according to the syllabus of Electronics & Telecommunication Engineering Department.
2. All files and records are maintained properly in the department.
3. More work is required from the faculty in the area of quality research papers and consultancy projects.
4. Senior faculty in the department are required for the posts like Associate Professor and Professor.
5. Arrange more expert's lectures from the industry and academicians.
6. Arrange frequent industrial visits for the students.
7. Encourage students to take internship in reputed organizations.
8. Encourage students to take part in national and international level competitions which can enhance their practical knowledge and help them in getting better placements.
9. Arrange Alumni meets for the students

Dr. Manoj Sankhe
Professor & Head Department of
Electronics &Telecommunications and
I/C Head Electrical Engineering.
SVKM's NMIMS, MPSTME.

Principal
Viva Institute of Technology

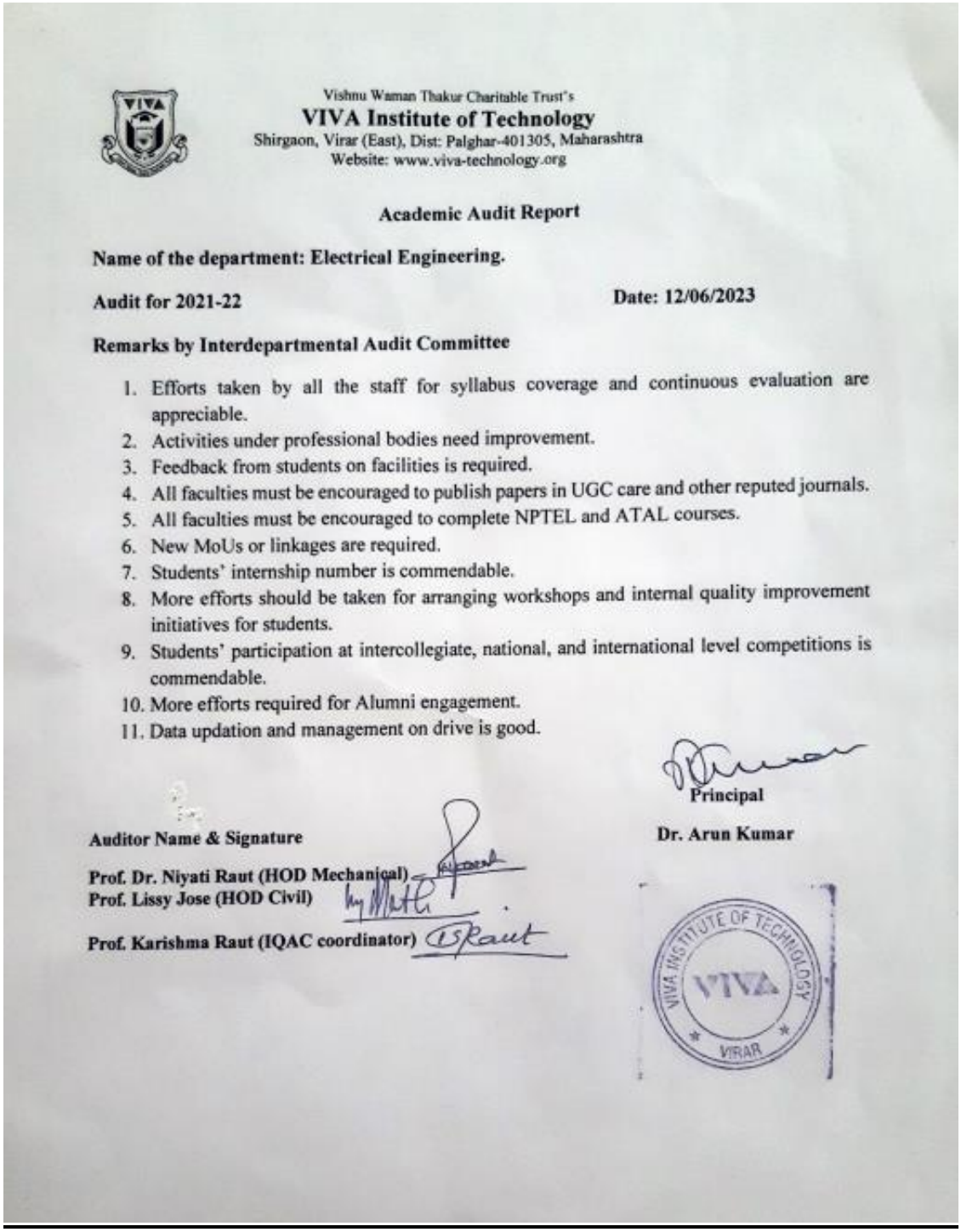
Prof. Archana Ingle
HOD EXTC Dept., Viva Institute of Technology

Prof. Karishma Raut
NBA Coordinator EXTC Dept., Viva Institute of Technology

ELECTRICAL ENGINEERING DEPARTMENT

INTERNAL AUDIT REPORT

- **Year (2021-22):**



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VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
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Academic Audit Report

Name of the department: Electrical Engineering.

Audit for 2021-22 **Date: 12/06/2023**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by all the staff for syllabus coverage and continuous evaluation are appreciable.
2. Activities under professional bodies need improvement.
3. Feedback from students on facilities is required.
4. All faculties must be encouraged to publish papers in UGC care and other reputed journals.
5. All faculties must be encouraged to complete NPTEL and ATAL courses.
6. New MoUs or linkages are required.
7. Students' internship number is commendable.
8. More efforts should be taken for arranging workshops and internal quality improvement initiatives for students.
9. Students' participation at intercollegiate, national, and international level competitions is commendable.
10. More efforts required for Alumni engagement.
11. Data updation and management on drive is good.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Dr. Niyati Raut (HOD Mechanical)
Prof. Lissy Jose (HOD Civil)
Prof. Karishma Raut (IQAC coordinator)

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Academic Audit Report

Name of the department: Department of Electrical Engineering.
Audit for AY 2021-22 **Date: 12/06/2023**
Remarks by Interdepartmental Audit Committee

Sr. No	Description	Observations	Remarks
1	Attendance	Above 75%, almost 100 % students are eligible, no defaulter students.	All students qualifies attendance criteria Few students with poor attendance have given written work for practice, question paper solving.
2	Coverage of Syllabus	90 - 100 %	Can take monthly syllabus coverage update from all faculties
3	Student Feedback	Feedback is taken and records are maintained	Facility feedback can be taken henceforth.
4	Continuous Evaluation	Hourly basis evaluation and records are maintained	-
5	Quality of unit test paper	Quality of question is good	Appropriately done. Pattern is updated during pandemic as per the guidelines given by UoM
6	Analysis of University Result (in %) 21-22 | 100 | 100 | 100 | 47.5 | 60 | 96	Overall result is satisfactory.	--
7	Remedial Classes	Remedial classes taken	Records can be maintained more effectively & maintain progress report.
8	Seminars/Guest Lectures	AY 2021-22 6 Seminars/ guest lecture	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
9	Industrial visits	AY 2021-22 1 Industrial Visits	Properly arranged and records are maintained properly.
10	Workshops	AY 2021-22	More effort should be taken for

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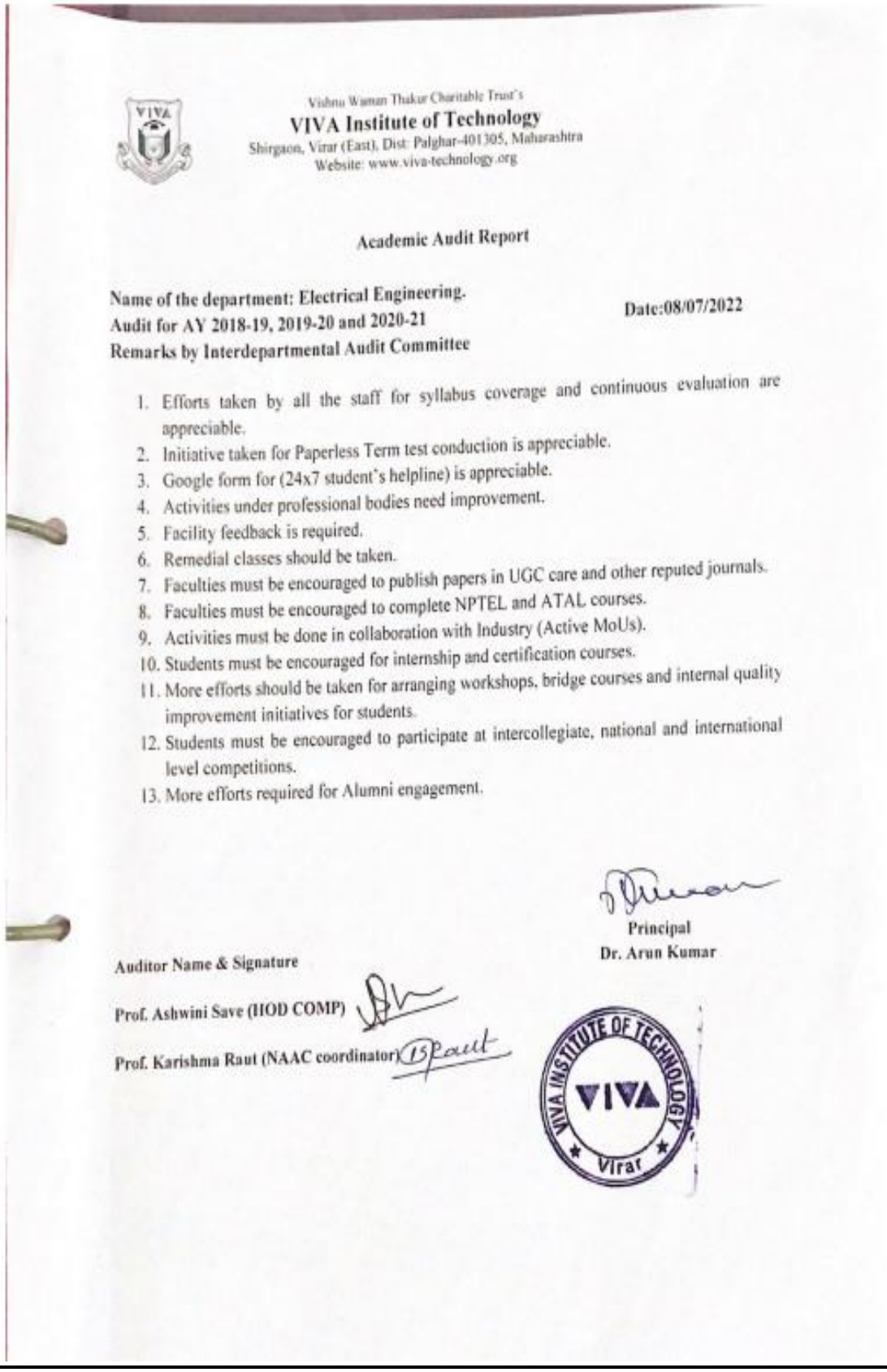
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

		No Workshop	arranging workshop
11	Student Counselling	1:20 ratio maintained for student's mentoring system	Records are maintained.
12	Faculty Development Program	AY 2021-22 01 STTP	Records are maintained
13	Infrastructure	Sufficient infrastructure is available	Machine lab maintenance is required.
14	Self-Learning Resources	NPTEL courses	Need improvement
15	Students Participation	NCRENB and Inter college competition participation	Encourage national and internal level participation
16	International Quality Assurance	AY 2021-22 No Workshop	More effort should be taken for arranging workshop and internal quality improvement initiative for students
17	Placement	AY 2021-22 17 Placements	-
18	Student - Teacher ratio	AY 2021-22 21.81 odd sem 22.70 even sem	As per requirement
19	Unique feature of department	Hourly follow up of student's attendance. Paperless term test conducted. Google form for students helpline is appreciable.	-
20	Newsletter/magazine	Two newsletters per year. One magazine per year	-

Year (2018-2021):



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Academic Audit Report

Name of the department: Electrical Engineering. Date:08/07/2022
Audit for AY 2018-19, 2019-20 and 2020-21
Remarks by Interdepartmental Audit Committee

1. Efforts taken by all the staff for syllabus coverage and continuous evaluation are appreciable.
2. Initiative taken for Paperless Term test conduction is appreciable.
3. Google form for (24x7 student's helpline) is appreciable.
4. Activities under professional bodies need improvement.
5. Facility feedback is required.
6. Remedial classes should be taken.
7. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
8. Faculties must be encouraged to complete NPTEL and ATAL courses.
9. Activities must be done in collaboration with Industry (Active MoUs).
10. Students must be encouraged for internship and certification courses.
11. More efforts should be taken for arranging workshops, bridge courses and internal quality improvement initiatives for students.
12. Students must be encouraged to participate at intercollegiate, national and international level competitions.
13. More efforts required for Alumni engagement.

Principal
Dr. Arun Kumar

Auditor Name & Signature

Prof. Ashwini Save (HOD COMP)

Prof. Karishma Raut (NAAC coordinator)

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Academic Audit Report

Name of the department : Department of Electrical Engineering.

Audit for AY 2018-19, 2019-20 and 2020-21 **Date:08/07/2022**

Remarks by Interdepartmental Audit Committee

Sr. No	Description	Observations	Remarks
1	Attendance	Above 75%, almost 100 % students are eligible, no defaulter students.	All students qualifies attendance criteria Few students with poor attendance have given written work for practice, question paper solving. During pandemic not required.
2	Coverage of Syllabus	90 - 100 %	Can take monthly syllabus coverage update from all faculties
3	Student Feedback	Feedback is taken and records are maintained	Facility feedback can be taken henceforth
4	Continuous Evaluation	Hourly basis evaluation and records are maintained	-
5	Quality of unit test paper	Quality of question is good	Appropriately done. Pattern is updated during pandemic as per the guidelines given by UoM
6	Analysis of University Result (in %) 18-19: 54.6, 63.6, 90 60.3, 73.3, 91.3 19-20: 66.1, 80.3, 87 100, 100, 100 20-21: 100, 100, 100 100, 100, 100	Overall result is satisfactory.	Can work on difficult subjects of sem IV
7	Remedial Classes	Remedial classes taken	Records can be maintained more effectively & maintain progress report.
8	Seminars/Guest Lectures	AY 2018-19 14 Seminars/ guest lecture AY 2019-20 07 Seminars/ guest lecture	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.

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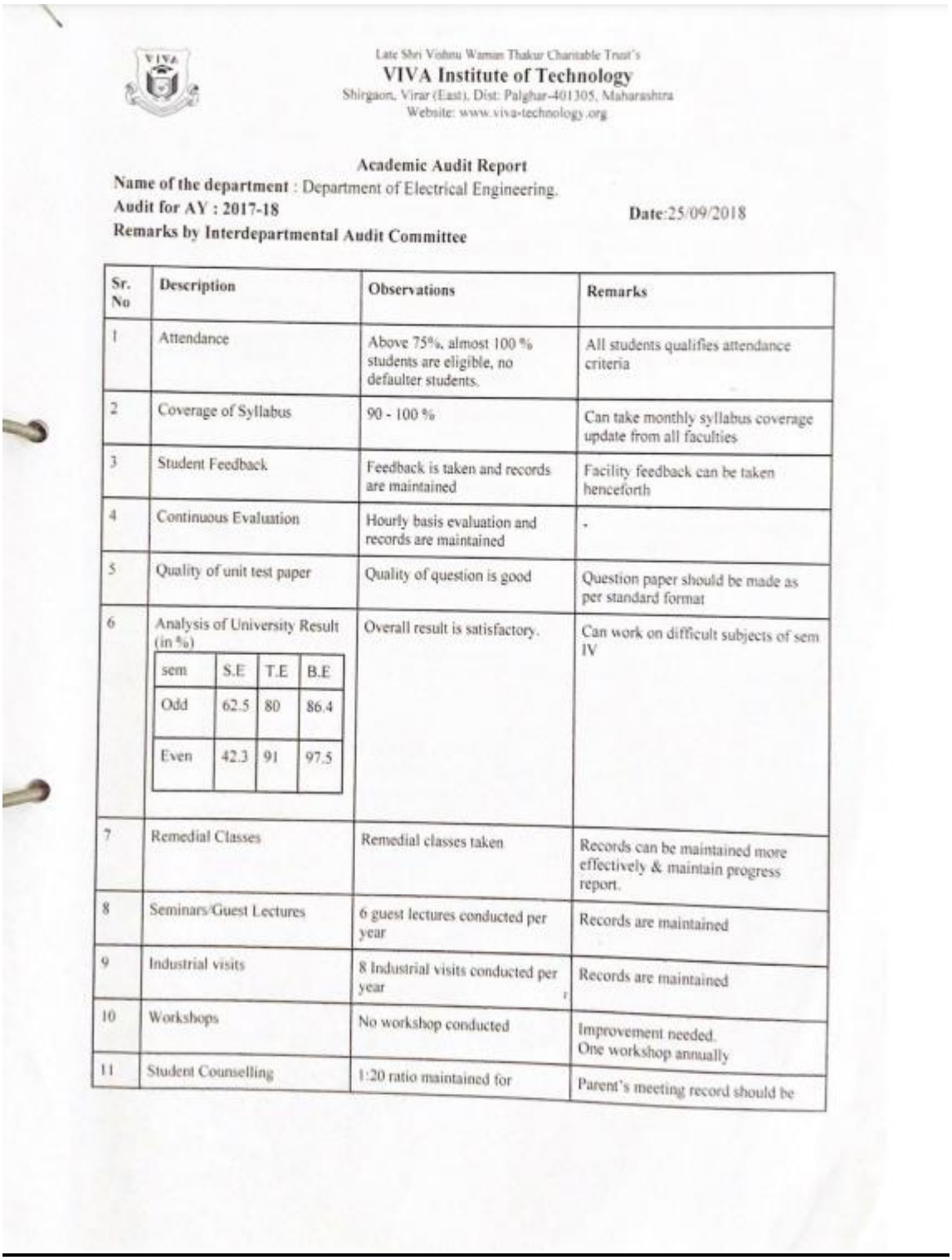
		AY 2020-21 0 Seminars/ guest lecture	
9	Industrial visits	AY 2018-19 06 Industrial Visits AY 2019-20 04 Industrial Visits AY 2020-21 No Industrial Visits	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
10	Workshops	AY 2018-19 01 Workshops AY 2019-20 01 Workshops AY 2020-21 No Workshop	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
11	Student Counselling	1:20 ratio maintained for student's mentoring system	Records are maintained. During pandemic mentoring is affected. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam
12	Faculty Development Program	AY 2018-19 01 STTP AY 2019-20 01 STTP AY 2020-21 No STTP	Records are maintained
13	Infrastructure	Sufficient infrastructure is available	Machine lab maintenance is required.
14	Self-Learning Resources	NPTEL courses	Need improvement
15	Students Participation	NCRENB and Inter college competition participation	Encourage national and internal level participation
16	International Quality Assurance	AY 2018-19 01 Workshop AY 2019-20 01 Workshop AY 2020-21 No Workshop	More effort should be taken for arranging workshop and internal quality improvement initiative for students

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

17	Placement	AY 2018-19 52 Placements AY 2019-20 24 Placements AY 2020-21 27 Placements	-
18	Student - Teacher ratio	AY 2018-19 18.58 odd sem 18.32 even sem AY 2019-20 16.86 odd sem 18.44 even sem AY 2020-21 20.89 odd sem 20.89 even sem	As per requirement
19	Unique feature of department	Hourly follow up of student's attendance. Paperless term test conducted. Google form for students helpline is appreciable.	-
20	Newsletter/magazine	Two newsletters per year. One magazine per year	-

INTERNAL AUDIT REPORT

Year (2017-18):



Late Shri Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department : Department of Electrical Engineering.
Audit for AY : 2017-18 **Date**:25/09/2018
Remarks by Interdepartmental Audit Committee

Sr. No	Description	Observations	Remarks
1	Attendance	Above 75%, almost 100 % students are eligible, no defaulter students.	All students qualifies attendance criteria
2	Coverage of Syllabus	90 - 100 %	Can take monthly syllabus coverage update from all faculties
3	Student Feedback	Feedback is taken and records are maintained	Facility feedback can be taken henceforth
4	Continuous Evaluation	Hourly basis evaluation and records are maintained	-
5	Quality of unit test paper	Quality of question is good	Question paper should be made as per standard format
6	Analysis of University Result (in %)	Overall result is satisfactory.	Can work on difficult subjects of sem IV
7	Remedial Classes	Remedial classes taken	Records can be maintained more effectively & maintain progress report.
8	Seminars/Guest Lectures	6 guest lectures conducted per year	Records are maintained
9	Industrial visits	8 Industrial visits conducted per year	Records are maintained
10	Workshops	No workshop conducted	Improvement needed. One workshop annually
11	Student Counselling	1:20 ratio maintained for	Parent's meeting record should be

sem	S.E	T.E	B.E
Odd	62.5	80	86.4
Even	42.3	91	97.5

Late Shri Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

		student's mentoring system	maintained in mentor file.
12	Faculty Development Program	1 week ISTE approved STTP was conducted in a year	Records are maintained
13	Infrastructure	Sufficient infrastructure is available	Machine lab maintenance is required. HOD cabin is required
14	Self-Learning Resources	NPTEL courses	Need improvement
15	Students Participation	NCRENB and Inter college competition participation	Encourage national and internal level participation
16	International Quality Assurance	EESA workshop conducted	-
17	Placement	20 students placed out of 59 students through college placement	-
18	Student - Teacher ratio	1:20	As per requirement
19	Unique feature of department	Hourly follow up of student's attendance	-
20	Newsletter/magazine	Two newsletters per year. One magazine per year	-

Remarks by Internal Audit Committee:

1. Overall documentation is good.
2. Student's Attendance record is impressive.
3. Google form for (24x7 student's helpline) is appreciable.
4. Faculty should be encouraged for publication in UGC approved journals.
5. Mentoring system and self-learning area should be improved.
6. Student's participation at national and international level should be improved.

Principal
Dr. Arun Kumar

Auditor Name & Signature

Prof. Ashwini Save (HOD COMP)

Prof. Lissy Jose (HOD CIVIL)

Prof. Karishma Raut (NAAC coordinator)

Prof. Mansi Lakhani (AP MECH)

VIVA INSTITUTE OF TECHNOLOGY VIVA VIRAR

EXTERNAL AUDIT REPORT

Year (2017-18):

Remarks by External Academic Auditor

Dr. Manoj S. Sankhe

Professor & Head Department of Electronics & Telecommunications and

I/C Head Electrical Engineering, SVKM'S NMIMS, MPSTME, Vile Parle, Mumbai.

July 7, 2018

The following are the observations for the external academic audit took place on Saturday, 7th July 2018 for the Electrical Department in Viva Institute of Technology, Virar.

1. Presentation given by Department Head along with insight of all activities conducted throughout the year.
2. All labs are conducted according to the syllabus of Electrical Department.
3. Some major equipment's are required in the renewable energy lab like Solar PV training system and wind energy training system and so on.
4. More work is required from the faculty in the area of quality research papers and consultancy projects.
5. Senior faculty in the department are required for the posts like Associate Professor and Professor.
6. Arrange more expert's lectures from industry and academicians.
7. Arrange frequent industrial visits for the students.
8. Arrange Alumni meets for the students.

Above Remarks are received on email.(Printed on the backside of this page).

B886
B. Save

anojkumar yadav <anojkumaryadav@viva-technology.org>

Inviting you as External Academic Auditor

Manoj Sankhe <Manoj.Sankhe@nmims.edu> Thu, Aug 23, 2018 at 2:10 PM
To: anojkumar yadav <anojkumaryadav@viva-technology.org>
Cc: "principalvit@vivacollege.org" <principalvit@vivacollege.org>, "bhushansave@yahoo.com" <bhushansave@yahoo.com>

Dear Sir,

Please find attached herewith Remarks by the External Academic Auditor for the academic audit conducted on 7th July 2018.

Thanks and Regards,

Dr. Manoj S. Sankhe

Professor & Head Department of Electronics & Telecommunications and

I/C Head Electrical Engineering.

Narsee Monjee Institute of Management Studies
Deemed to be UNIVERSITY
NMIMS

V.L. Mehta Road, Vile Parle (W),

Mumbai - 400 056. Maharashtra, India. **www.nmims.edu**

Ph. +91 22 4233 4092

Mobile: 9819941828

E-mail: manoj.sankhe@nmims.edu

From: anojkumar yadav [mailto:anojkumaryadav@viva-technology.org]
Sent: 14 June 2018 10:43
To: Manoj Sankhe
Subject: Re: Inviting you as External Academic Auditor

Respected sir,

[Quoted text hidden]
[Quoted text hidden]

Feedback on Academic Audit.docx
18K

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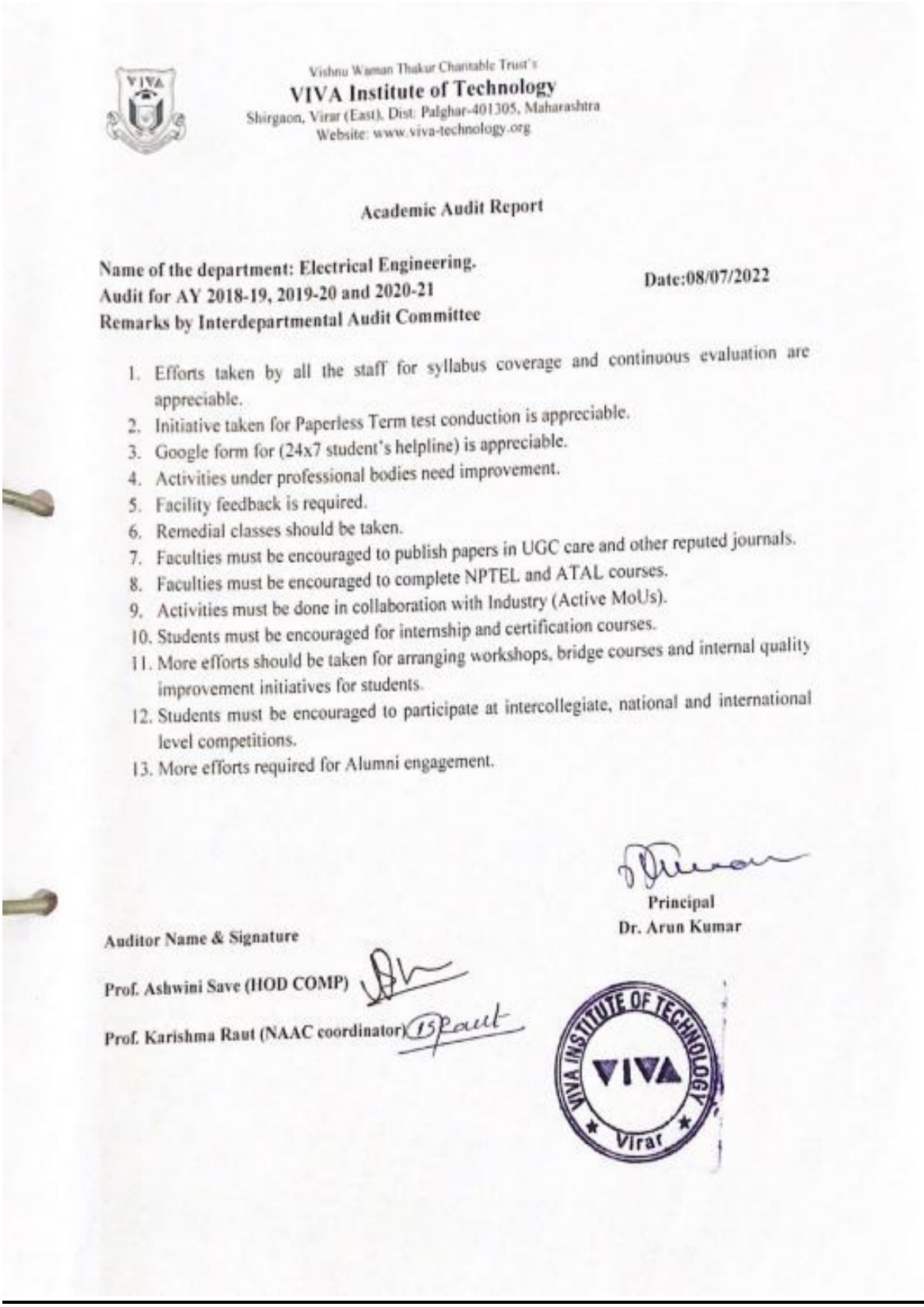
INTERNAL AUDIT REPORT

Year (2018-2022):



Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Electrical Engineering. **Date:08/07/2022**
Audit for AY 2018-19, 2019-20 and 2020-21
Remarks by Interdepartmental Audit Committee

1. Efforts taken by all the staff for syllabus coverage and continuous evaluation are appreciable.
2. Initiative taken for Paperless Term test conduction is appreciable.
3. Google form for (24x7 student's helpline) is appreciable.
4. Activities under professional bodies need improvement.
5. Facility feedback is required.
6. Remedial classes should be taken.
7. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
8. Faculties must be encouraged to complete NPTEL and ATAL courses.
9. Activities must be done in collaboration with Industry (Active MoUs).
10. Students must be encouraged for internship and certification courses.
11. More efforts should be taken for arranging workshops, bridge courses and internal quality improvement initiatives for students.
12. Students must be encouraged to participate at intercollegiate, national and international level competitions.
13. More efforts required for Alumni engagement.

Principal
Dr. Arun Kumar

Auditor Name & Signature

Prof. Ashwini Save (HOD COMP)

Prof. Karishma Raut (NAAC coordinator)

VIVA INSTITUTE OF TECHNOLOGY VIVA Virar

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department : Department of Electrical Engineering.

Audit for AY 2018-19, 2019-20 and 2020-21 **Date:08/07/2022**

Remarks by Interdepartmental Audit Committee

Sr. No	Description	Observations	Remarks
1	Attendance	Above 75%, almost 100 % students are eligible, no defaulter students.	All students qualifies attendance criteria Few students with poor attendance have given written work for practice, question paper solving. During pandemic not required.
2	Coverage of Syllabus	90 - 100 %	Can take monthly syllabus coverage update from all faculties
3	Student Feedback	Feedback is taken and records are maintained	Facility feedback can be taken henceforth
4	Continuous Evaluation	Hourly basis evaluation and records are maintained	-
5	Quality of unit test paper	Quality of question is good	Appropriately done. Pattern is updated during pandemic as per the guidelines given by UoM
6	Analysis of University Result (in %) 18-19 54.6 63.6 90 60.3 73.3 91.3 19-20 66.1 80.3 87 100 100 100 20-21 100 100 100 100 100 100	Overall result is satisfactory.	Can work on difficult subjects of sem IV
7	Remedial Classes	Remedial classes taken	Records can be maintained more effectively & maintain progress report.
8	Seminars/Guest Lectures	AY 2018-19 14 Seminars/ guest lecture AY 2019-20 07 Seminars/ guest lecture	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

		AY 2020-21 0 Seminars/ guest lecture	
9	Industrial visits	AY 2018-19 06 Industrial Visits AY 2019-20 04 Industrial Visits AY 2020-21 No Industrial Visits	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
10	Workshops	AY 2018-19 01 Workshops AY 2019-20 01 Workshops AY 2020-21 No Workshop	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
11	Student Counselling	1:20 ratio maintained for student's mentoring system	Records are maintained. During pandemic mentoring is affected. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam
12	Faculty Development Program	AY 2018-19 01 STTP AY 2019-20 01 STTP AY 2020-21 No STTP	Records are maintained
13	Infrastructure	Sufficient infrastructure is available	Machine lab maintenance is required.
14	Self-Learning Resources	NPTEL courses	Need improvement
15	Students Participation	NCRENB and Inter college competition participation	Encourage national and internal level participation
16	International Quality Assurance	AY 2018-19 01 Workshop AY 2019-20 01 Workshop AY 2020-21 No Workshop	More effort should be taken for arranging workshop and internal quality improvement initiative for students

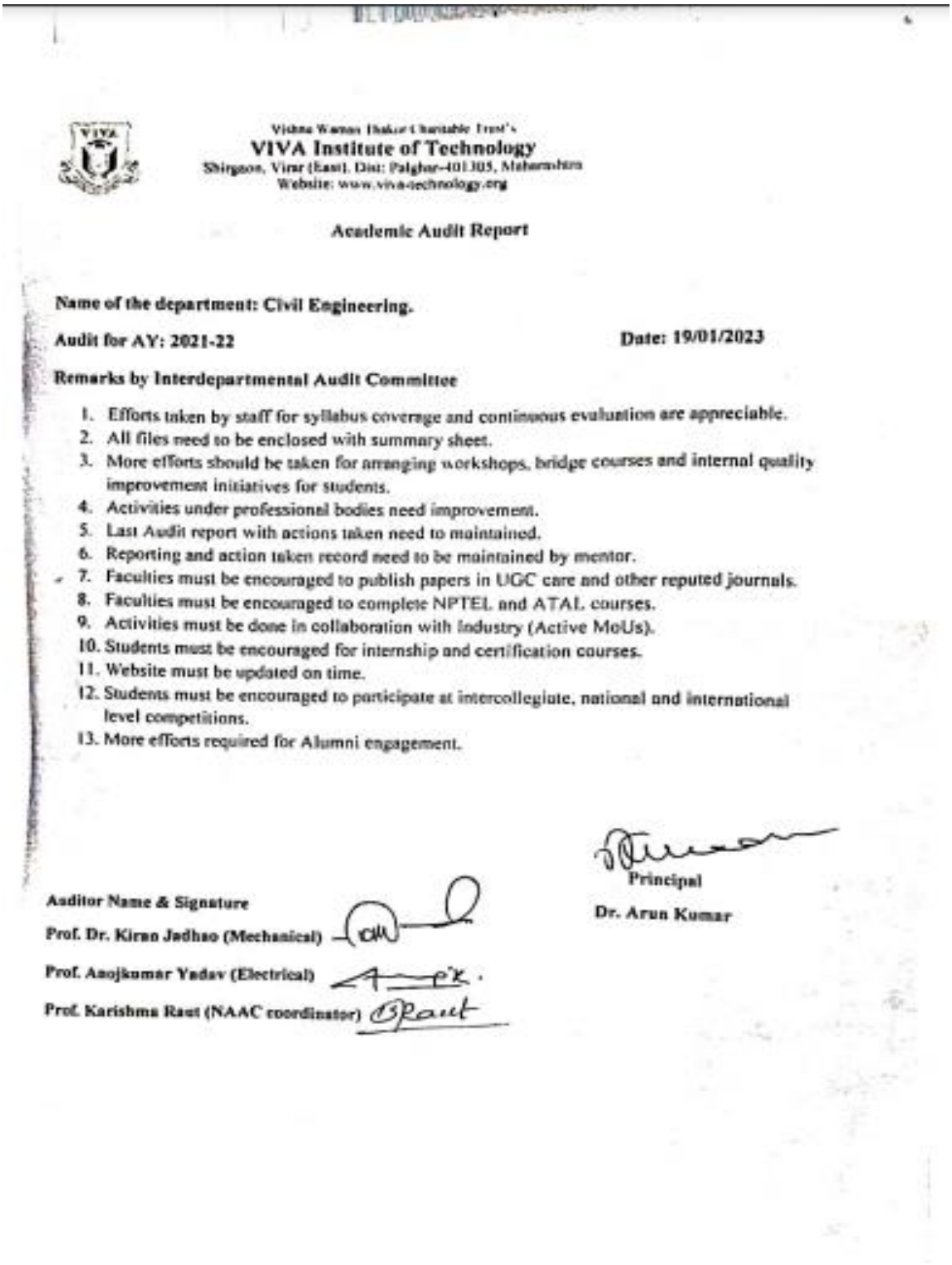
Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

17	Placement	AY 2018-19 52 Placements AY 2019-20 24 Placements AY 2020-21 27 Placements	-
18	Student - Teacher ratio	AY 2018-19 18.58 odd sem 18.32 even sem AY 2019-20 16.86 odd sem 18.44 even sem AY 2020-21 20.89 odd sem 20.89 even sem	As per requirement
19	Unique feature of department	Hourly follow up of student's attendance. Paperless term test conducted. Google form for students helpline is appreciable.	-
20	Newsletter/magazine	Two newsletters per year. One magazine per year	-

CIVIL DEPARTMENT

INTERNAL AUDIT REPORT

Year (2021-22):



Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Civil Engineering.

Audit for AY: 2021-22 **Date: 19/01/2023**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. All files need to be enclosed with summary sheet.
3. More efforts should be taken for arranging workshops, bridge courses and internal quality improvement initiatives for students.
4. Activities under professional bodies need improvement.
5. Last Audit report with actions taken need to maintained.
6. Reporting and action taken record need to be maintained by mentor.
7. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
8. Faculties must be encouraged to complete NPTEL and ATAL courses.
9. Activities must be done in collaboration with Industry (Active MoUs).
10. Students must be encouraged for internship and certification courses.
11. Website must be updated on time.
12. Students must be encouraged to participate at intercollegiate, national and international level competitions.
13. More efforts required for Alumni engagement.

Principal
Dr. Arun Kumar

Auditor Name & Signature

Prof. Dr. Kiran Jadhao (Mechanical)

Prof. Anojkumar Yadav (Electrical)

Prof. Karishma Raut (NAAC coordinator)

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Department of Civil Engineering.

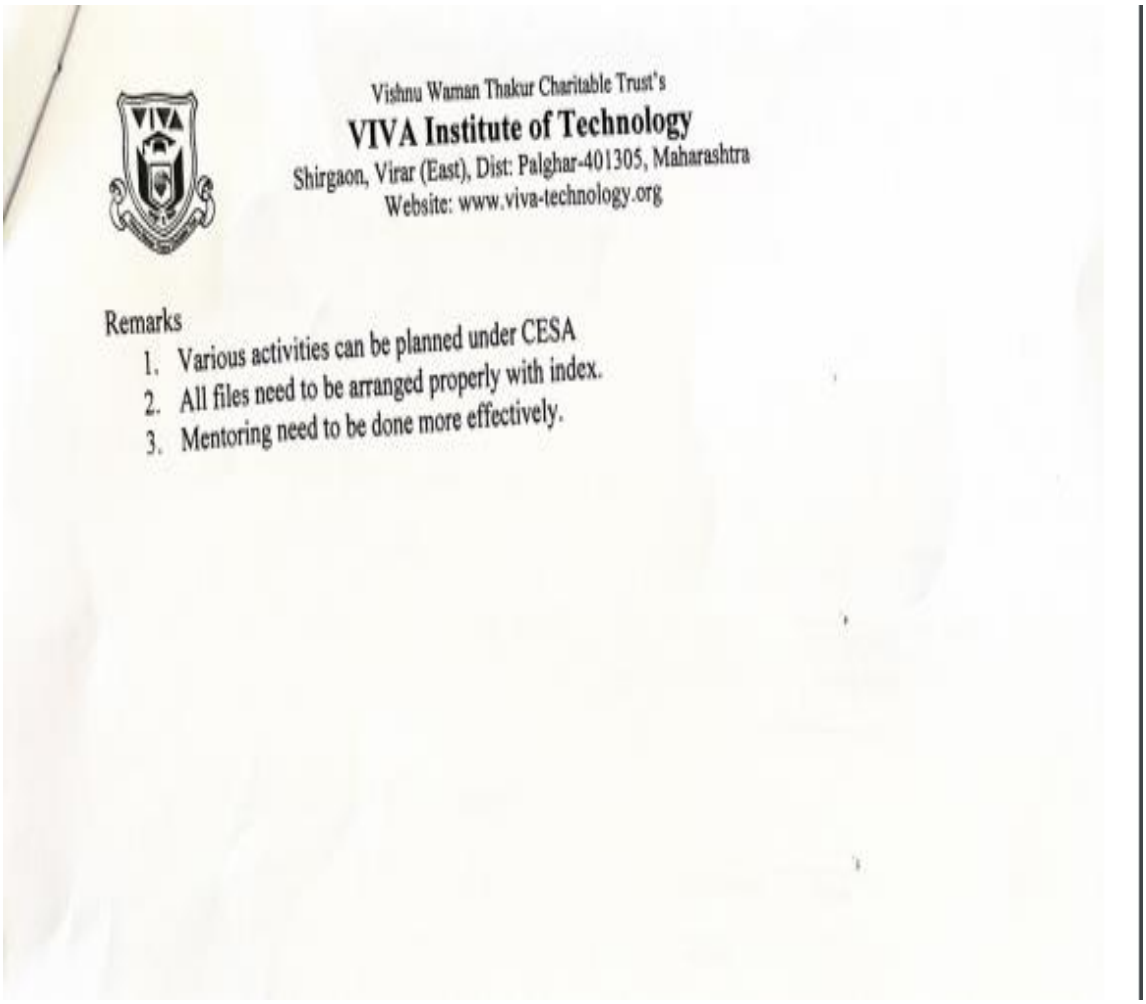
Audit for AY: 2021-22 **Date: 19/01/2022**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	Average 65-70% attendance is observed.	All students with poor attendance have given written work for practice, question paper solving. During pandemic not required.
2	Coverage of syllabus	100% syllabus covered.	Unique format is required for course file. Proper records should be maintained. Corrective actions need to be planned for shortfall.
3	Student feedback	Offline feedback is taken. Records are maintained.	It is suggested to take facility feedback.
4	Continuous Evaluation	Monthly meetings are conducted.	It is suggested to maintain syllabus completion record.
	Quality of Unit Test Paper	Unit test paper records are maintained.	Pattern is updated during pandemic as per the guidelines given by UoM.
5	Analysis of University result 21-22 | SE | TE | BE % | 57.89 | 73.16 | 93.44	Third year and final year results are satisfactory.	Second year result is low.
6	Remedial classes	Records of remedial classes are maintained.	It is suggested that, remedial lectures for ATKT students should be arranged.
7	Seminars/ guest lecture	AY 2021-22 02 Seminars/ guest lecture	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
8	Industrial Visits	AY 2021-22 01 Industrial Visit	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

9	Workshops	AY 2021-22 0 Workshops	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
10	Student counseling	Mentor System is planned and 20 students are allotted per mentor.	Records are maintained. During pandemic mentoring is affected. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam.
11	Faculty Development Programs	AY 2021-22 01 STTP	At least one FDP should be arranged.
12	Infrastructure	Appropriate Infrastructure with well-equipped classrooms, Tutorial Rooms and Laboratories.	Customized furniture is needed in some laboratories for specimen storage.
13	Self-Learning resources	Project lab is made available for Virtual Lab experiments, Software Tutorials,	-
14	Student Participation	Active participation is observed in activities.	Need improvement in inter-collegiate participation.
15	Internal Quality Assurance	Software courses, Quality Circle, site visits are arranged.	Need improvement.
16	Placement	AY 2021-22 21 Placements	Efforts can be taken in improving eligibility and placement.
17	Student-Teacher Ratio	AY 2021-22 25.52 odd sem 25.52 even sem	--
18	Unique Features of Department	Department conducted safety week and spot program activity for students.	--
19	Newsletters/Magazines	Annual Newsletter is published.	Suggested to publish Annual Magazine. Photos of Industrial visit can be added in newsletter



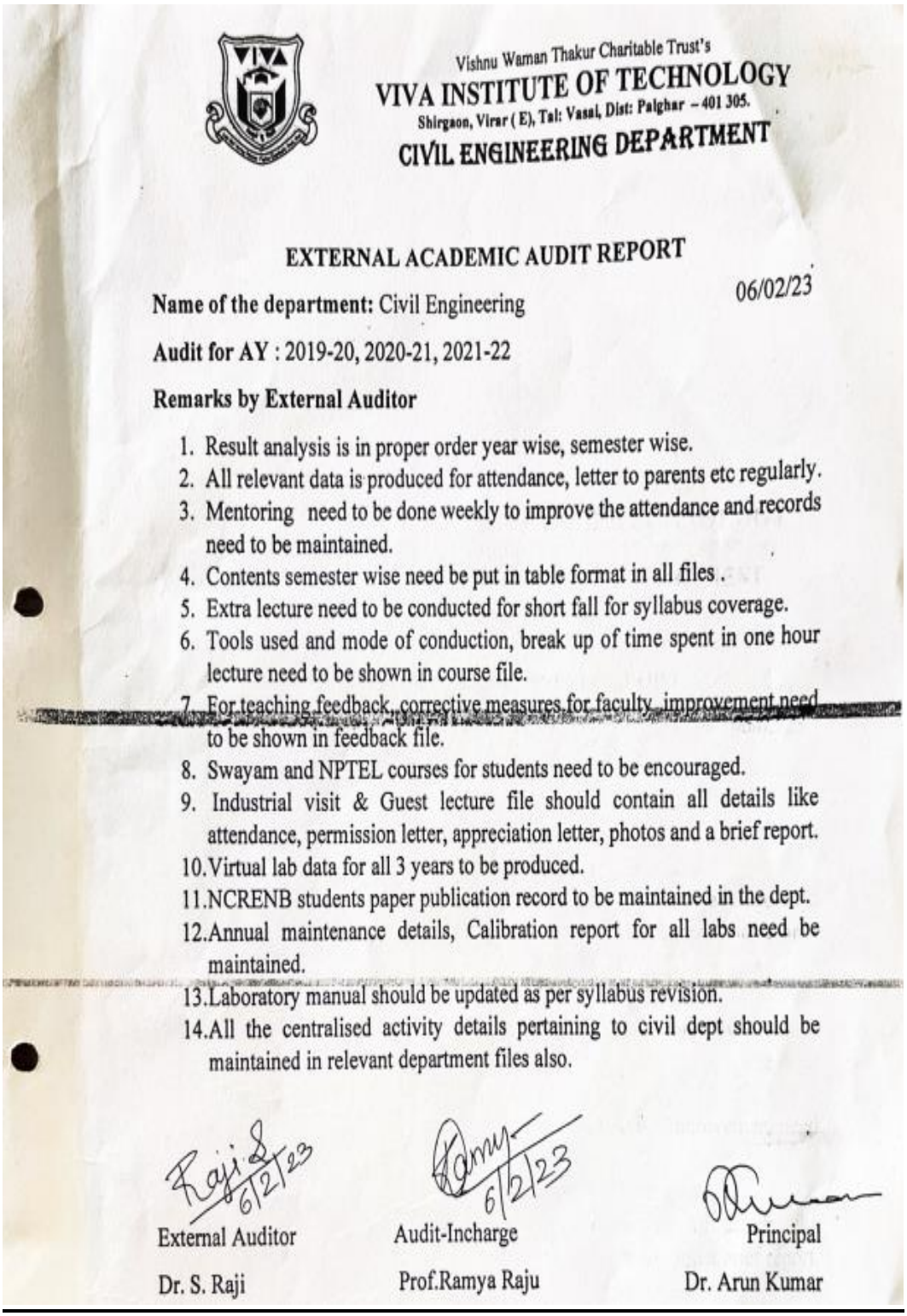
Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Remarks

1. Various activities can be planned under CESA
2. All files need to be arranged properly with index.
3. Mentoring need to be done more effectively.

EXTERNAL AUDIT REPORT

Year (2021-22):



Vishnu Waman Thakur Charitable Trust's
VIVA INSTITUTE OF TECHNOLOGY
Shirgaon, Virar (E), Tal: Vasai, Dist: Palghar – 401 305.
CIVIL ENGINEERING DEPARTMENT

EXTERNAL ACADEMIC AUDIT REPORT

06/02/23

Name of the department: Civil Engineering

Audit for AY : 2019-20, 2020-21, 2021-22

Remarks by External Auditor

1. Result analysis is in proper order year wise, semester wise.
2. All relevant data is produced for attendance, letter to parents etc regularly.
3. Mentoring need to be done weekly to improve the attendance and records need to be maintained.
4. Contents semester wise need be put in table format in all files .
5. Extra lecture need to be conducted for short fall for syllabus coverage.
6. Tools used and mode of conduction, break up of time spent in one hour lecture need to be shown in course file.
7. For teaching feedback, corrective measures for faculty improvement need to be shown in feedback file.
8. Swayam and NPTEL courses for students need to be encouraged.
9. Industrial visit & Guest lecture file should contain all details like attendance, permission letter, appreciation letter, photos and a brief report.
10. Virtual lab data for all 3 years to be produced.
11. NCRENB students paper publication record to be maintained in the dept.
12. Annual maintenance details, Calibration report for all labs need be maintained.
13. Laboratory manual should be updated as per syllabus revision.
14. All the centralised activity details pertaining to civil dept should be maintained in relevant department files also.

Raji S 6/2/23
External Auditor
Dr. S. Raji

Ramya 6/2/23
Audit-Incharge
Prof.Ramya Raju

Principal
Dr. Arun Kumar

INTERNAL AUDIT REPORT

Year (2018-2021):

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Civil Engineering.

Audit for AY: 2018-19, 2019-20 and 2020-21 **Date: 07/07/2022**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. Improvement is seen to maintained files and records as per suggestion given.
3. Syllabus coverage and continuous evaluation is improved.
4. More efforts should be taken for arranging workshops, bridge courses and internal quality improvement initiatives for students.
5. Activities under professional bodies need improvement.
6. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
7. Faculties must be encouraged to complete NPTEL and ATAL courses.
8. Activities must be done in collaboration with Industry (Active MoUs).
9. Students must be encouraged for internship and certification courses.
10. Website must be updated on time.
11. Technical magazine and Newsletter work is still pending.
12. Students must be encouraged to participate at intercollegiate, national and international level competitions.
13. More efforts required for Alumni engagement.

Principal

Dr. Arun Kumar

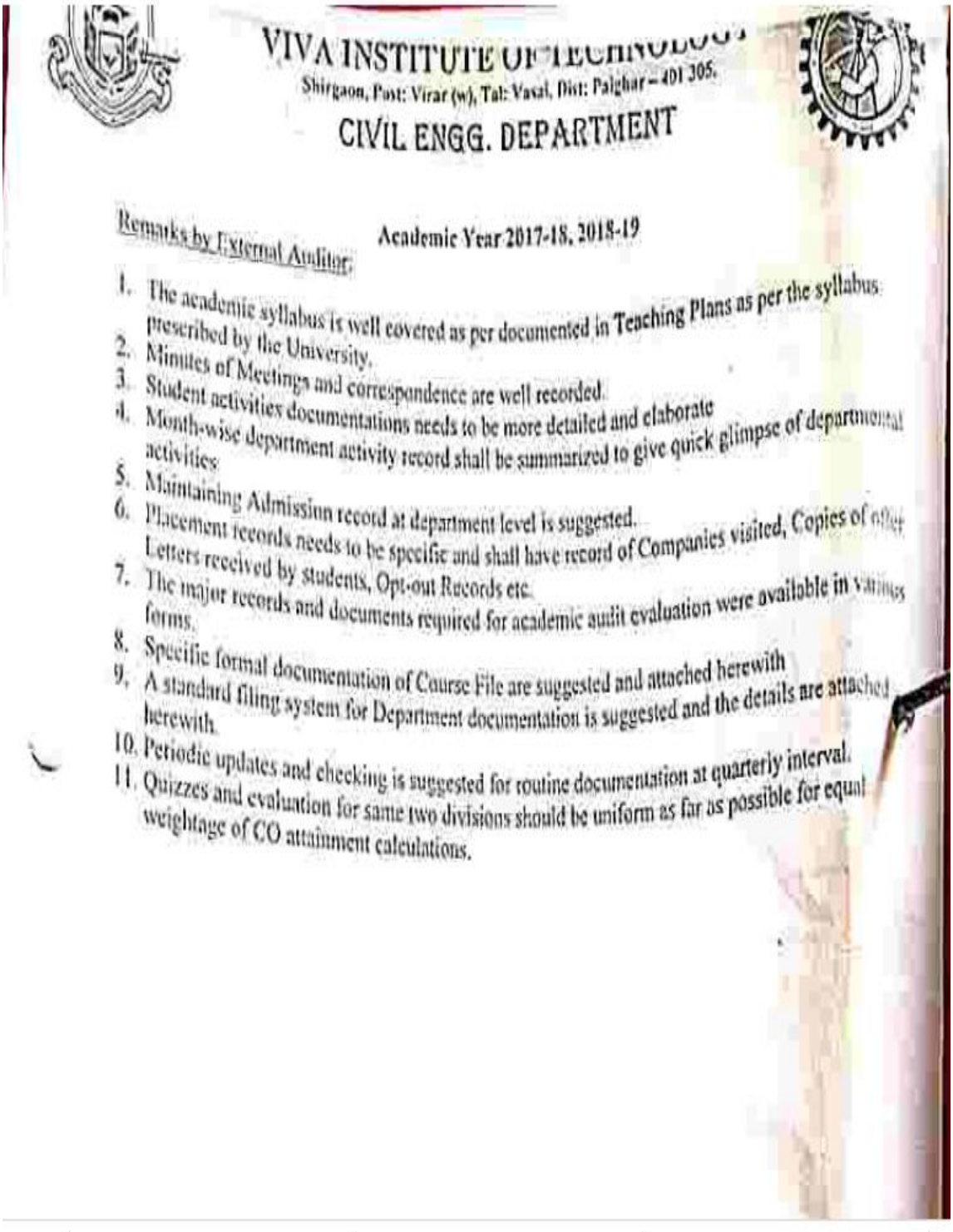
Auditor Name & Signature

Prof. Archana Ingle (HOD EXTC)

Prof. Karishma Raut (NAAC Coordinator)

EXTERNAL AUDIT REPORT

Year (2018-2021):



VIVA INSTITUTE OF TECHNOLOGY
Shirgaon, Post: Virar (w), Tal: Vasai, Dist: Palghar – 401 305.
CIVIL ENGG. DEPARTMENT

Remarks by External Auditor:

Academic Year 2017-18, 2018-19

1. The academic syllabus is well covered as per documented in Teaching Plans as per the syllabus prescribed by the University.
2. Minutes of Meetings and correspondence are well recorded.
3. Student activities documentations needs to be more detailed and elaborate
4. Month-wise department activity record shall be summarized to give quick glimpse of departmental activities.
5. Maintaining Admission record at department level is suggested.
6. Placement records needs to be specific and shall have record of Companies visited, Copies of offer Letters received by students, Opt-out Records etc.
7. The major records and documents required for academic audit evaluation were available in various forms.
8. Specific formal documentation of Course File are suggested and attached herewith
9. A standard filing system for Department documentation is suggested and the details are attached herewith.
10. Periodic updates and checking is suggested for routine documentation at quarterly interval.
11. Quizzes and evaluation for same two divisions should be uniform as far as possible for equal weightage of CO attainment calculations.

FACULTY PERSONAL FILE CONTENTS:

1. CV and date of joining of the institute
2. Work load (every semester)(from date of Joining)
3. Time table (every semester))(from date of Joining)
4. Individual time table (every semester)
5. Certificate of workshop /conference/ STTP
6. Research papers copy
7. Extra activity for Institute and Department
8. Students feedback

Name and sign of the Auditor

15/11/19

Vishnu Waman Thakur Charitable Trust's
VIVA INSTITUTE OF TECHNOLOGY
Shirgaon, Virar (E), Tal: Vasai, Dist: Palghar – 401 305.
CIVIL ENGINEERING DEPARTMENT

EXTERNAL ACADEMIC AUDIT REPORT

Name of the department: Civil Engineering 06/02/23

Audit for AY : 2019-20, 2020-21, 2021-22

Remarks by External Auditor

1. Result analysis is in proper order year wise, semester wise.
2. All relevant data is produced for attendance, letter to parents etc regularly.
3. Mentoring need to be done weekly to improve the attendance and records need to be maintained.
4. Contents semester wise need be put in table format in all files .
5. Extra lecture need to be conducted for short fall for syllabus coverage.
6. Tools used and mode of conduction, break up of time spent in one hour lecture need to be shown in course file.
7. For teaching feedback, corrective measures for faculty improvement need to be shown in feedback file.
8. Swayam and NPTEL courses for students need to be encouraged.
9. Industrial visit & Guest lecture file should contain all details like attendance, permission letter, appreciation letter, photos and a brief report.
10. Virtual lab data for all 3 years to be produced.
11. NCRENB students paper publication record to be maintained in the dept.
12. Annual maintenance details, Calibration report for all labs need be maintained.
13. Laboratory manual should be updated as per syllabus revision.
14. All the centralised activity details pertaining to civil dept should be maintained in relevant department files also.

External Auditor	Audit-Incharge	Principal
Dr. S. Raji	Prof.Ramya Raju	Dr. Arun Kumar

MECHANICAL DEPARTMENT

INTERNAL AUDIT REPORT

Year (2021-2022):

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Mechanical Engineering.

Audit for 2021-22 **Date: 08/02/2023**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. The efforts taken for patent grant are commendable.
3. Files must be maintained with action taken report wherever applicable.
4. Good number of placements, however need to maintain data properly.
5. More efforts should be taken for arranging workshops, Value Added courses and internal quality improvement initiatives for students.
6. Activities must be done in collaboration with Industry (Active MoUs).
7. More efforts required for Alumni engagement.
8. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
9. Faculties have completed NPTEL and ATAL courses. It must be continuous policy to upgrade.
10. Students must be encouraged for internship and certificate courses.

Principal
Dr. Arun Kumar

Auditor Name & Signature

Prof. Bhushan Save (HOD Electrical)

Prof. Karishma Raut (IQAC coordinator)

VIVA INSTITUTE OF TECHNOLOGY VIRAR

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Mechanical Engineering Department

Audit for AY 2021-22 **Date: 08/02/2023**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	20% of students are found to be defaulters	All students with poor attendance have been given written work for practice, and question paper solving.
2	Coverage of syllabus	90-100% syllabus completed	Appreciable
3	Student feedback	Student feedback is taken twice a semester by the feedback committee. Due to COVID 19 Facility fefeedback was not taken. Feedback is taken online.	Feedback is discussed. Rethink about action taken.
4	Continuous Evaluation	Due to COVID-19, all lectures are conducted online. Regarding the project, the maximum projects were simulation-based and the videos of working models were considered. Exams were online and the assessment was also online, And also the rubrics were not finalised by the committee.	Syllabus completion Report
5	Quality of Unit test paper	Unit test paper is as per standard format. Question paper is revised every year. Domain wise committees were formed but due to COVID 19 further action was not taken.	Maintained.
6	Analysis of University result sem III V VII A 100 (Reg.) 99 100 B 100 (DSE) 100 100 sem IV VI VIII	All results were satisfactory	All results were satisfactory

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	A	26..15	68	87		
	B	20	58	95		
7	Remedial classes				Remedial classes are taken for weak students based on term test marks.	No students
8	Seminars/ guest lecture				7 guest lectures conducted in the academic year 2021-22.	Maintained
9	Industrial Visits				2 Industrial visits were conducted for students and 1 Industrial visit was conducted for faculty in the academic year 2021-22	Maintained
10	Workshops				2 workshop conducted in the academic year 2021-22.	Maintained
11	Student counseling				A mentoring system is followed wherein 1 faculty is provided as mentor for every 20-25 students and also 1 parents meeting is conducted per year to discuss students' progress with parents. As per the suggestion of the last audit report improvement is done in mentor form.	Maintained More efforts on action taken wherever required
12	Faculty Development Programs				1 sttp was planned for the academic year 2021-22 but due to some reasons it was postponed to July 2022	More effort for execution Ok
13	Infrastructure				Sufficient Classrooms, Laboratories, Tutorial room, and Drawing hall is available. Laboratory maintenance is also given as per requirement.	As per norm
14	Self-Learning resources				SAE Lab, Aero Lab, Welding Lab Virtual Lab, Departmental library are self-learning resources for students.	Value added courses
15	Student Participation				Students have participated and won at international, national and state level competition. Ranks achieved in academic year 2021-22 for co-curricular participation are as follows: National - 04 participations were 1st and 5th position secured Ranks for Extracurricular participation are:	Supporting documents available on department website

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		State Level : 03 participations where two1st positions and one 2nd position secured.	
16	Internal Quality Assurance	Mini project exhibition and poster presentation. 1 Industry Projects. 82 students did internships	Maintained
17	Placement	76 students were placed out of 111 (interested students) All students were placed in core companies.	Maintained
18	Student–Teacher Ratio	Odd – 21.64 / 1 Even – 20.97 / 1	Only 1 lab assistant in the whole department.
19	Unique features of Department	Students Achievements, Internship (82 in 2021-21), Placement at Department level, Industrial Projects. Welding learning center.	Maintained
20	Newsletter/ Magazine	1 Magazine / year. 2 Newsletter / yr.	Good.

EXTERNAL AUDIT REPORT

Year (2021-2022):

Vishnu Waman Thakur Charitable Trust's
VIVA INSTITUTE OF TECHNOLOGY
At. Shirgaon, Veer Sawarkar Road, Virar(East), Taluka-Vasai, Palghar District – 401305
DEPARTMENT OF MECHANICAL ENGINEERING

Academic Audit Report
AY 2021-22

Academic audit for AY 2021-22 of the Department of Mechanical Engineering is conducted on 14 /02 /2023.
It is based on code of conduct and actions taken in relation to continuous improvement.

Sr. No.	Description	Observations	Remarks
1	Student Feedback	Student feedback is taken twice per semester. Due to COVID-19 facility feedback was not taken.	Take facility and curriculum feedback from next semester.
2	Continuous Evaluation	Due to COVID-19, all lectures are conducted online. Regarding the project, the maximum projects were simulation-based and the videos of working models were considered. Exams were online and the assessment was also online, And also the rubrics were not finalised by the committee.	Record maintained
3	Quality of Unit Test Paper	Unit test paper is as per standard format. Question paper is revised every year. Domain wise committees were formed but due to COVID 19 further action was not taken.	Domain wise committee should review the question papers
4	Analysis of University Result sem: III, V, VII A: 100 (Reg.), 99, 100	All results were satisfactory.	Record maintained

	<table><tr><td>B</td><td>100 (DSE)</td><td>100</td><td>100</td></tr><tr><td>sem</td><td>IV</td><td>VI</td><td>VIII</td></tr><tr><td>A</td><td>26..15</td><td>68</td><td>87</td></tr><tr><td>B</td><td>20</td><td>58</td><td>95</td></tr></table>		
5	Remedial Classes	Remedial classes are taken for weak students based on term test marks. Students were Guided for the GATE exam.	Record for online attendance should be maintained
6	Seminars/Guest Lectures	7 guest lectures conducted in the academic year 2021-22.	Record maintained
7	Industrial visits	2 Industrial visits were conducted for students and 1 Industrial visit was conducted for faculty in the academic year 2021-22	Record maintained
8	Workshops	1 workshop conducted in the academic year 2021-22.	Record maintained
9	Student Counseling	A mentoring system is followed wherein 1 faculty is provided as a mentor for every 20-25 students and also 1 parent meeting is conducted per year to discuss students' progress with parents. Due to COVID-19 meeting was taken on online mode in AY 2021-22	Record maintained
10	Faculty Development Program	1 STTP was planned for the academic year 2021-22 but it was postponed to July 2022 due to some reasons.	Record maintained
11	Infrastructure	Sufficient Classrooms, Laboratories, Tutorial room, and Drawing hall is available.	Record maintained

		Laboratory maintenance is also given as per requirement.	
12	Self-Learning Resources	SAE Lab, Aero Lab, Welding Lab Virtual Lab, Departmental library are self-learning resources for students.	Good record of MOOC/SWAYAM/ATAL/NITTT courses maintained
13	Students Participation	Ranks achieved in the academic year **2021-22** for co-curricular participation are as follows: National - 04 participations were 1st and 5th position secured Ranks for Extracurricular participation are: State Level : 03 participations where two1st positions and one 2nd position secured.	Supporting documents available on the department website
14	Placement	76 students were placed out of 111 (interested students) in AY 2021-22	Placement record for 2020-21 was poor but it has been observed that appreciable placements in AY 2021-22
15	Internship and Industrial Projects	82 students did internships in 2021-22. 1 B.E. projects was Industrial projects in AY 2021-22	Records are maintained
16	Student Teacher Ratio	Year: **2021-22** Odd – 21.77 / 1 Even – 19.60 / 1	satisfactory student teacher ratio
17	Newsletter/magazine	1 magazine per year 2 newsletter per year	Softcopy is available on Website

Remarks by External auditor:

1. Identify the gap in the university syllabus and do appropriate changes in mission statements.
2. Selection of the project should be done to help society.
3. For the betterment of students conduct quizzes on different domains.
4. Interested students can be provided online study material for competitive exams.

Prof. Prashant Patankar,
Assistant Professor
Accreditation co-ordinator
Dept. of Mechanical Engineering
D.J.Sanghavi College of Engineering

Prof. Nyati Raut
Head of Department
Dept. of Mechanical Engineering
VIVA Institute of Technology

Prof. Omkar Joshi
Accreditation co-ordinator
Dept. of Mechanical Engineering
VIVA Institute of Technology

INTERNAL AUDIT REPORT

Year (2018-2021):

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Mechanical Engineering

Audit for AY 2018-19, 2019-20 and 2020-21 **Date: 08/07/2022**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. The most highlighting point of the department is the excellent student achievements at National and International level.
3. Also, very good work done by department placement coordinator to place students at department level.
4. More efforts should be taken for arranging workshops, bridge courses and internal quality improvement initiatives for students.
5. Activities must be done in collaboration with Industry (Active MoUs).
6. More efforts required for Alumni engagement.
7. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
8. Faculties have completed NPTEL and ATAL courses. It must be continuous policy to upgrade.
9. Students must be encouraged for internship and certification courses.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Bhushan Save (HOD Electrical)

Prof. Karishma Raut (NAAC Coordinator)

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist. Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Mechanical Engineering Department

Audit for AY 2018-19, 2019-20 and 2020-21 **Date: 08/07/2022**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	Almost 25% students were defaulter in AY 2018-19. In AY 2019-20 and 2020-21 lectures were attended on online mode	All students with poor attendance have given written work for practice, question paper solving. During pandemic not required.
2	Coverage of syllabus	70-90% syllabus completed	Needs improvement
3	Student feedback	Student feedback taken twice in a semester by feedback committee. Feedback is taken online.	Feedback on facilities has to be taken.
4	Continuous Evaluation	3 meetings per semester.	Proper records should be maintained. Verification can be improved.
5	Quality of Unit test paper	Good	Appropriately done. Pattern is updated during pandemic as per the guidelines given by UoM.
6	Analysis of University result	Semester 3 results a bit less	Work can be initiated to improve the semester 3 results.

2018-19			
SEM	III	V	VII
A	50	70	75
B	46	72	86
SEM	IV	VI	VIII
A	69	77	96
B	65	77	97

2019-20			
sem	III	V	VII
A	40	77.1	79.4
B	48	78.8	86.6
sem	IV	VI	VIII
A	100	100	100
B	100	100	100

2020-21			
sem	III	V	VII

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VIVA Institute of Technology
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	A	79	100	100		
	B	79	99	100		
	sem	IV	VI	VIII		
	A	98	100	100		
	B	98	100	100		
7	Remedial classes				Good effort taken by staff in taking many remedial lectures.	Impact analysis can be performed.
8	Seminars/ guest lecture				AY 2018-19 06 Seminars/ guest lecture AY 2019-20 06 Seminars/ guest lecture AY 2020-21 04 Seminars/ guest lecture	Properly arranged and records are maintained properly. It is suggested that mapp of PO's and PSO's can be done.
9	Industrial Visits				AY 2018-19 02 Industrial Visits AY 2019-20 02 Industrial Visits AY 2020-21 No Industrial Visits	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
10	Workshops				AY 2018-19 01 Workshops AY 2019-20 01 Workshops AY 2020-21 No Workshop	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done..
11	Student counseling				2 meetings in a semester. File properly maintained.	Records are maintained. During pandemic mentoring is affected. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam.
12	Faculty Development Programs				AY 2018-19 01 STTP AY 2019-20 01 STTP AY 2020-21 01 STTP	Good
13	Infrastructure				6 Classrooms, 1 Tutorial Room, 9 Labs, 2 Drawing rooms, 1 staffroom.	Sufficient infrastructure. 20PCs for whole department seems less.
14	Self-Learning resources				SAE and Aero LAB	Good

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

15	Student Participation	SAE BAJA, SAE AERO, Participation at IIT Madras and IIT Kharagpur.	Have won prizes at National and International level which is excellent.
16	Internal Quality Assurance	Mini project exhibition and poster presentation. 4 Industry Projects.	Can have improvements.
17	Placement	AY 2018-19 76 Placements out of 110 interested students AY 2019-20 48 Placements out of 60 interested students AY 2020-21 36 Placements	Very good work by department placement coordinator in taking initiative at personal level to place students.
18	Student – Teacher Ratio	AY 2018-19 21.64 odd sem 20.97 even sem AY 2019-20 21.77 odd sem 19.60 even sem AY 2020-21 21.5 odd sem 23.88 even sem	Only 1 lab assistant in the whole department.
19	Unique features of Department	Students Achievements, Internship (129 in 2018-19, 51 in 2019-20, 38 in 2020-21), Placement at Department level, Industrial Projects.	Excellent student achievements and Department level placement.
20	Newsletter/ Magazine	1 Magazine / year, 2 Newsletter / yr.	Good.

INTERNAL AUDIT REPORT

Year (2017-2018):

Academic Audit Report

Name of the department: Mechanical Engineering Department

Audit for AY: 2017-18 **Date: 09/10/2018**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	Many Defaulters	Strict action should be taken
2	Coverage of syllabus	70-90% syllabus completed	Needs improvement
3	Student feedback	Student feedback taken twice in a semester by feedback committee. Feedback is taken online.	Feedback on facilities has to be taken.
4	Continuous Evaluation	3 meetings per semester.	Proper records should be maintained. Verification can be improved.
5	Quality of Unit test paper	Good	-
6	Analysis of University result 42.5 64 80.5 63 61.5 89.5	Semester 3 results a bit less	Work can be initiated to improve the semester 3 results.
7	Remedial classes	Good effort taken by staff in taking many remedial lectures.	Impact analysis can be performed.
8	Seminars/ guest lecture	1 guest lecture conducted each for SE and TE.	Guest lecture for BE should also be arranged.
9	Industrial Visits	1 IV each for SE, TE, and BE	Good
10	Workshops	1 workshop undertaken for SE	More numbers of workshop can be conducted.
11	Student counseling	2 meetings in a semester. File properly maintained.	Good
12	Faculty Development Programs	1 ISTE approved STTP in a year.	Good
13	Infrastructure	6 Classrooms, 1 Tutorial Room, 9 Labs, 2 Drawing rooms, 1 staffroom.	Sufficient infrastructure. 20PCs for whole department seems less.
14	Self-Learning resources	SAE and Aero LAB	Good
15	Student Participation	SAE BAJA, SAE AERO, Participation at IIT Madras and IIT Kharagpur.	Have won prizes at National and International level which is excellent.
16	Internal Quality Assurance	Mini project exhibition and poster presentation. 4 Industry Projects.	Can have improvements.

17	Placement	61/103 (59.22%) students placed, of which 51 placement done by department placement coordinator.	Very good work by department placement coordinator in taking initiative at personal level to place students.
18	Student – Teacher Ratio	Odd – 21.9 Even – 20.25	Only 1 lab assistant in the whole department.
19	Unique features of Department	Students Achievements, Internship (65 in 2017-18), Placement at Department level, Industrial Projects.	Excellent student achievements and Department level placement.
20	Newsletter/ Magazine	1 Magazine / year. 2 Newsletter / yr.	Good.

Remarks by interdepartmental committee

1. The most highlighting point of the department is the excellent student achievements at National and International level.
2. Also, very good work done by department placement coordinator to place students at department level (51/61).
3. More lab assistants are required, project lab is also required.
4. Only 2 guest lecture and 1 workshop conducted.
5. Feedback system should be foolproof and without any mistakes.
6. Major work needs to be done for documentation including attendance, defaulters, syllabus coverage, continuous evaluation, teaching plan.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Bhushan Save (HOD Electrical) –

Prof. Ajajul Haque (HOD Applied sciences & Humanities)

Prof. Karishma Raut (NAAC Coordinator)

Prof. Madhura Ranade (AP EXTC)

Prof. Anojkumar Yadav (AP Electrical)

Prof. Ramya Raju (AP Civil)

Prof. Tatwadarshi P.N.

VIVA INSTITUTE OF TECHNOLOGY VIVA VIRAR

EXTERNAL AUDIT REPORT

Year (2017-2018):

Late Shri Vishnu Waman Thakur Charitable Trust's
VIVA INSTITUTE OF TECHNOLOGY
At. Shirgaon, Veer Sawarkar Road, Virar(East), Taluka-Vasai, Palghar District – 401305
DEPARTMENT OF MECHANICAL ENGINEERING

Academic Audit Report
AY 2017-18

Academic audit for AY 2017-18 of Department of Mechanical Engineering is conducted on 27/11/2018.
It is based on code of conduct and actions taken in relation to continuous improvement.

Sr.No.	Description	Observations	Remarks
1	Student Feedback	Student feedback is taken twice per semester	Appropriate actions should be taken for feedback below average.
2	Continuous Evaluation	All activities to be carried out in department per semester is reflected in departmental academic calendar. One department meeting is taken every month to evaluate syllabus progress, B.E project progress, and to check adherence of activities with respect to planned activities in academic calendar	Minutes of Meeting is maintained.
3	Quality of Unit Test Paper	Unit test paper is as per standard format. Question paper is revised every year.	Course outcomes should be reflected in question paper.
4	Analysis of University Result sem III V VII A 51 54 74 B 34 74 87	Final year results are good. Third year results are satisfactory	Efforts should be taken to improve Second year results

	sem IV VI VIII A 62 66 83 B 64 57 96		
5	Remedial Classes	Remedial classes is taken for weak students	Provision for remedial classes is not found in departmental calender.
6	Seminars/Guest Lectures	One guest lecture was conducted per semester	Records are maintained. No. of guest lectures should be improved to fill gap in curriculum.
7	Industrial visits	3 Industrial visits were conducted per year.	Records are maintained.
8	Workshops	1 workshop was conducted in a year	Records are maintained.
9	Student Counselling	Mentoring system is followed wherein 1 faculty is provided as mentor for every 20-25 students and also 1 parents meeting is conducted per year for discussing progress of students with parents	Mentor should also identify weak and bright students and take action for excelling their performance.
10	Faculty Development Program	1 week ISTE approved STTP was conducted in a year, resource person being from industry.	Records are maintained.

		won at international, national and state level competition. Ranks achieved in academic year 2017-18 for co-curricular participation are as follows: International - 01 National - 08 State - 01 Ranks for Extracurricular participation are: National Level : 19	is appreciable. Records are maintained
14	placement	61 students were placed out of 103 (interested students) Out of 61, 51 students were placed in core companies.	Placement ratio is satisfactory.
15	Student Teacher Ratio	Odd - 21.9/1 Even - 20.25/1	Student faculty ratio should be improved.
16	Newsletter/magazine	1 magazine per year 2 newsletter per year	Soft copy is available

Remarks by External auditor:

1. Gaps should be identified in curriculum subject wise and appropriate measures should be taken for bridging the gap.
2. Vision mission statement should be displayed in all classrooms, laboratories, etc.
3. Modifications to be done in academic calendar as suggested.
4. Process flow chart to be maintained for B.E project selection and evaluation process.
5. Alumni association should be formed
6. Students' participation in co-curricular & extra-curricular activities is appreciable
7. Students' placement ratio in core industry is good.
8. Students' internship record is also good.

Prof. Prashant Patankar,
Assistant Professor
Accreditation co-ordinator
Dept. of Mechanical Engineering
D.J.Sanghavi College of Engineering

Prof. Niyati Raut
Head of Department
Dept. of Mechanical Engineering
VIVA Institute of Technology

Prof. Mansi Lakhani
Accreditation co-ordinator
Dept. of Mechanical Engineering
VIVA Institute of Technology

COMPUTER DEPARTMENT

INTERNAL AUDIT REPORT

Year (2021-2022):

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Computer Engineering.

Audit for AY: 2021-22 **Date: 03/02/2023**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation with skill enhancement are appreciable.
2. All files and records are maintained properly.
3. More efforts should be taken for arranging workshops (under professional body CSI), bridge courses and internal quality improvement initiatives for students.
4. Activities under professional bodies are appreciable.
5. Faculties have good number of publications in UGC care and other reputed journals. It must be continuous policy to upgrade.
6. Faculties must be encouraged to complete NPTEL and ATAL courses. It must be continuous policy to upgrade.
7. Students must be encouraged for internship and certification courses.
8. Activities must be done in collaboration with Industry (Fuctional MoUs).
9. Activities taken for internal quality improvement is appreciable.
10. More efforts required for Alumni engagement.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Archana Ingle (HOD,EXTC)

Prof. Bhushan Save (HOD,Electrical)

Prof. Karishma Raut (NAAC coordinator)

Academic Audit Report

Name of the department: Computer Engineering Department

Audit for AY 2021 – 22 **Date: 03/02/2023**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	90-95% is the overall attendance	All students with poor attendance have given written work for practice, question paper solving. During pandemic not required.
2	Coverage of syllabus	90-100%	Monthly update is maintained
3	Student feedback	Good Maintenance on feedback	Facility Feedback can be added
4	Continuous Evaluation	Minutes of meeting , Academic Calendar and Task head	All well maintained and done as per planned
5	Quality of Unit test paper	70-80% questions changed every year	Good Quality and according to CO-PO mapping. Pattern is updated during pandemic as per the guidelines given by UoM.
6	Analysis of University result 21-22: 96.15, 100.00, 100.00 76.92, 93.06, 100.00	Average of 90 % for T.E and B.E	Good result.
7	Remedial classes	All records are available and lectures taken are planned	Improvement in result is seen, number of lectures can be increased.
8	Seminars/ guest lecture	03 Seminars/ guest lecture	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
9	Industrial Visits	No Industrial Visits	Can be done for one day also can arrange virtual IV.
10	Workshops	No Workshop	Arrange online workshops.
11	Student counseling	Mentor ratio 1:20 / 1:25 ; one meet per month	Records are maintained.

			During pandemic Mentor meets were conducted online. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam.
12	Faculty Development Programs	1 STTP	Record Maintained
13	Infrastructure	6 labs , 2 sharing , 3 Classroom , 1 staff room, 1 Tutorial room	more space is required for staff room
14	Self Learning resources	Virtual.Lab, Flip class, Role play , literature survey	All documents available
15	Student Participation	More than 17 events	More participation can be encouraged
16	Internal Quality Assurance	20 % change in experiments , paper publications'	Good number of papers published by staff members
17	Placement	38 Placements	Can be improved
18	Student – Teacher Ratio	15.07 odd sem 15.00 even sem	Good Ratio
19	Unique features of Department	IEEE papers – 11 Publication -103 ISSN NO: Tech next Department YouTube channel	Good Publication by students and staff
20	Newsletter/ Magazine	- TechNext Magzine (Biannaul) - Annual Newsletter	Uploaded on website

INTERNAL AUDIT REPORT

Year (2017-2021):

Academic Audit Report

Name of the department: Computer Engineering

Audit for AY 2018-19, 2019-20 and 2020-21 **Date: 07/07/2022**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. All files and records are maintained properly.
3. More efforts should be taken for arranging workshops (under professional body CSI), bridge courses and internal quality improvement initiatives for students.
4. Activities under professional bodies are appreciable.
5. Faculties have good number of publications in UGC care and other reputed journals. It must be continuous policy to upgrade.
6. Faculties must be encouraged to complete NPTEL and ATAL courses. It must be continuous policy to upgrade.
7. Students must be encouraged for internship and certification courses.
8. Activities must be done in collaboration with Industry (Active MoUs).
9. Activities taken for internal quality improvement is appreciable.
10. More efforts required for Alumni engagement.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Lissy Jose (HOD CIVIL)

Prof. Karishma Raut (NAAC coordinator)

Academic Audit Report

Name of the department: Computer Engineering Department

Audit for AY: 2017-18 **Date: 28/09/2018**

Remarks by Interdepartmental Audit Committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	90-95% is the overall attendance	Maintained satisfactorily ; some shortfall for certain subjects should be maintained
2	Coverage of syllabus	90-100%	Monthly update is maintained
3	Student feedback	Good Maintenance on feedback	Facility Feedback can be added
4	Continuous Evaluation	Minutes of meeting , Academic Calendar and Task head	All well maintained and done as per planned
5	Quality of Unit test paper	70-80% questions changed every year	Good Quality and according to CO-PO mapping
6	Analysis of University result 50.68 | 90.7 | 86.08 69.7 | 98.65 | 100	Average of 90 % for T.E and B.E	For S.E can be improved
7	Remedial classes	All records are available and lectures taken are planned	Improvement in result is seen, number of lectures can be increased.
8	Seminars/ guest lecture	One seminar and 1 Guest Lecture per sem	Can be increased as per the subjects
9	Industrial Visits	No I.V.	Can be done for a shorter distance
10	Workshops	2 workshops conducted	Good initiative
11	Student counseling	Mentor ratio 1:20 / 1:25 ; one meet per month	Good Effort and done as per planned
12	Faculty Development Programs	1 STTP in a year ; approved STTP by ISTE	Record Maintained
13	Infrastructure	6 labs , 2 sharing , 3 Classroom , 1 staff room	No tutorial room and more space is required for staff room
14	Self Learning resources	Virtual.Lab, Flip class, Role play , literature survey	All documents available
15	Student Participation	More than 17 events	More participation can be encouraged

16	Internal Quality Assurance	20 % change in experiments , paper publications'	Good number of papers published by staff members
17	Placement	56 % placement (18 out of 32)	Can be improved
18	Student – Teacher Ratio	15 faculties; ODD 16.23 EVEN 17.13	Good Ratio
19	Unique features of Department	IEEE papers – 30 Publication -68 ISSN NO: Tech next	Good Publication by students and staff
20	Newsletter/ Magazine	Newsletter -1 Newsletter -2 (combined yearly)	-----

Remarks

1. Excellent initiative is taken for self-learning like literature study
2. Good number of publications by student and teachers with best paper award
3. Good number of MoUs
4. Technical magazine is having ISSN number is appreciable.

Principal

Dr. Arun Kumar

VIVA INSTITUTE OF TECHNOLOGY VIVA VIRAR

Auditor Name & Signature

Prof. Archana Ingle (HOD EXTC)

Prof. Bhushan Save (HOD Electrical)

Prof. Karishma Raut (NAAC coordinator)

Prof. Mansi Lakhani (AP MECH)

Prof. Ramya Raju (AP Civil)

Academic Audit Report

Name of the department: Computer Engineering Department

Audit for AY 2018-19, 2019-20 and 2020-21 **Date: 07/07/2022**

Remarks by Interdepartmental Audit Committee

<table>
<tr><th>Sr. No.</th><th>Description</th><th>Observations</th><th>Remarks</th></tr>
<tr><td>1.</td><td>Attendance</td><td>90-95% is the overall attendance</td><td>All students with poor attendance have given written work for practice, question paper solving.

During pandemic not required.</td></tr>
<tr><td>2</td><td>Coverage of syllabus</td><td>90-100%</td><td>Monthly update is maintained</td></tr>
<tr><td>3</td><td>Student feedback</td><td>Good Maintenance on feedback</td><td>Facility Feedback can be added</td></tr>
<tr><td>4</td><td>Continuous Evaluation</td><td>Minutes of meeting , Academic Calendar and Task head</td><td>All well maintained and done as per planned</td></tr>
<tr><td>5</td><td>Quality of Unit test paper</td><td>70-80% questions changed every year</td><td>Good Quality and according to CO-PO mapping.
Pattern is updated during pandemic as per the guidelines given by UoM.</td></tr>
<tr><td>6</td><td>Analysis of University result
<table>
<tr><td>18-19</td><td>66.67</td><td>92.18</td><td>96.1</td></tr>
<tr><td></td><td>70</td><td>80.95</td><td>98.7</td></tr>
<tr><td>19-20</td><td>65.22</td><td>88.41</td><td>90.63</td></tr>
<tr><td></td><td>100</td><td>100</td><td>100</td></tr>
<tr><td>20-21</td><td>98.61</td><td>100</td><td>100</td></tr>
<tr><td></td><td>100</td><td>100</td><td>100</td></tr>
</table></td><td>Average of 90 % for T.E and B.E</td><td>For S.E can be improved</td></tr>
<tr><td>7</td><td>Remedial classes</td><td>All records are available and lectures taken are planned</td><td>Improvement in result is seen, number of lectures can be increased.</td></tr>
<tr><td>8</td><td>Seminars/ guest lecture</td><td>AY 2018-19
03 Seminars/ guest lecture
AY 2019-20</td><td>Properly arranged and records are maintained properly.</td></tr>
</table>

		04 Seminars/ guest lecture AY 2020-21 01 Seminars/ guest lecture	It is suggested that mapping of PO's and PSO's can be done.
9	Industrial Visits	No Industrial Visits	Can be done for one day also can arrange virtual IV.
10	Workshops	AY 2018-19 04 Workshops AY 2019-20 01 Workshops AY 2020-21 No Workshop	Properly arranged and records are maintained properly. It is suggested that mapping of PO's and PSO's can be done.
11	Student counseling	Mentor ratio 1:20 / 1:25 ; one meet per month	Records are maintained. During pandemic Mentor meets were conducted online. However, whenever required all kind of help and guidance is provided to students regarding their mental health, fee issues, exam.
12	Faculty Development Programs	AY 2018-19 01 STTP AY 2019-20 No STTP AY 2020-21 No STTP	Record Maintained
13	Infrastructure	6 labs , 2 sharing , 3 Classroom , 1 staff room	more space is required for staff room
14	Self Learning resources	Virtual.Lab, Flip class, Role play , literature survey	All documents available
15	Student Participation	More than 17 events	More participation can be encouraged
16	Internal Quality Assurance	20 % change in experiments , paper publications'	Good number of papers published by staff members
17	Placement	AY 2018-19 33 Placements AY 2019-20 37 Placements AY 2020-21 29 Placements	Can be improved
18	Student – Teacher Ratio	AY 2018-19 14.53 odd sem 14.00 even sem AY 2019-20 13.47 odd sem	Good Ratio

		13.47 even sem AY 2020-21 14.47 odd sem 14.53 even sem	
19	Unique features of Department	IEEE papers – 30 Publication -68 ISSN NO: Tech next Department YouTube channel	Good Publication by students and staff
20	Newsletter/ Magazine	- TechNext Magzine (Biannaul) - Annual Newsletter	Uploaded on website

Late Shri. Vishnu Waman Thakur Charitable Trust's
VIVA INSTITUTE OF TECHNOLOGY
(Approved by AICTE, New Delhi, DTE, Govt. of Maharashtra and Affiliated to the University of Mumbai)
Computer Engineering Department

Report on Academic Audit 2017-2018

Date: 04/01/2019

Time: 10:00 am - 04:30 pm

Auditor Name : Dr. M. M. Chandane

Associate Professor, Information Technology,

Veermata Jijabai Technological Institute (VJTI)

Matunga, Mumbai.

Remarks/ Suggestions Given:

1. **Design lab experiments for different levels of student (include some experiment for bright students also which can make them think).**
2. **Design some challenging assignment questions for bright students.**
3. **Implement 'Curriculum Gap finding mechanism' using backtracking in CO-PO mapping process.**
4. **Implement Peer learning (student will learn from students) if possible.**
5. **Motivate students for self learning.**
6. **Improve Publications.**
7. **Attend workshops.**
8. **Use blooms taxonomy in formation of CO's and implementation.**
9. **Use online resources for teaching.**

Late Shri. Vishnu Waman Thakur Charitable Trust's
VIVA INSTITUTE OF TECHNOLOGY
(Approved by AICTE, New Delhi, DTE, Govt. of Maharashtra and Affiliated to the University of Mumbai)
Computer Engineering Department

AY 2017-18

Academic Audit Attendance

Date: 04.01.19

Faculty Name	Signature
Ashwini Save	
Pallavi Vartak	
Sunita Naik	
Janhavi Sangoi	
Reshma Chaudhari	
Tatwadarshi P. N.	
Dnyneshwar Bhabad	
Umesh Mohite	
Vinit Raut	
Saniket Kudoo	
Bhushan Talekar	AB
Akshata Raut	
Monali Pimple	AB
Bhavika Thakur	

Auditor Signature:

Auditor Name: Dr. M. M. Chandane

Date:

HAS DEPARTMENT

INTERNAL AUDIT REPORT

Year (2017-2022):

Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Shirgaon, Virar (East), Dist: Palghar-401 305, Maharashtra
Website: www.viva-technology.org

Academic Audit Report

Name of the department: Humanities and Applied Sciences (First Year Engineering)

Audit for AY: AY 2017-18 to 2020-21 and 2021-22 **Date: 06/06/2023**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. All files need to be enclosed with summary sheet.
3. More efforts should be taken for internal quality improvement initiatives and value-added courses for students.
4. Reporting and action taken record need to be maintained by mentor.
5. Faculties must be encouraged to publish papers in UGC care and other reputed journals.
6. All file formats must be as guided by IQAC.
7. PTA meeting records and action taken need more attention.
8. Remedial lectures file is to be updated.
9. Check availability of virtual lab.
10. All course files must be maintained as per the guidelines given by IQAC.
11. Faculties must be encouraged to complete NPTEL and ATAL courses.
12. Department academic calendar must be prepared with all activities, meetings(fortnightly) planned.
13. All timetables (Division wise) and workload distribution must be properly maintained.
14. Students must be encouraged for internship and certification courses.
15. Website must be updated on time.
16. Students must be encouraged to participate at intercollegiate, national, and international level competitions.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Archana Ingle (HOD EXTC)
Prof. Dr. Niyati Raut (HOD Mechanical)
Prof. Bhushan Save (HOD Electrical)
Prof. Anojkumar Yadav (Electrical)
Prof. Pratik Raut (Mechanical)

Prof. Karishma Raut (IQAC coordinator)

Name of the Department: Department of Humanities and Applied Sciences

Academic Audit for AY - 2017, 2018 , 2019 , 2020 , 2021 and 2022 Date: 06/06/2023

Remarks by Interdepartmental Audit committee

Sr. No.	Description	Observations	Remarks
1.	Attendance	60 to 90%	Need to Decide some policy to improve attendance
2	Coverage of syllabus	90-100%	Records are maintained in the course file.
3	Student feedback	Faculty feedback has been taken time to time Facility feedback need to take	Records are maintained. HOD conducted meetings with staff for better performance. Staff appreciation is awarded with certificates
4	Continuous Evaluation	• Monthly Syllabus-Completion report • Remedial Lectures	It is suggested to maintain a proper remedial lecture record.
5	Quality of Unit test paper	• 70 to 80% changes • All CO's are covered. • As per university prescribed pattern.	It is suggested to mention CO's even on students' question papers. During the pandemic paper pattern was revised as per the university guidelines.

6	Analysis of University result 2017-18 62.7 78.0 2018-19 57.0 70.7 2019-20 69.6 100 2020-21 100 100 2021-22 100 85.81	Overall result is good	Result analysis is done & records are maintained.
7	Remedial classes	Remedial lectures have been taken for weak performance in unit tests.	Records are maintained. but it is suggested to maintain a more precise format. During Pandemic not required.
8	Seminars/ guest lecture	AY- 2017-2018- 0 AY 2018-2019- 0 AY 2019-2020-01 AY 2020-2021- 0 AY 2021-2022-01	Records are properly maintained. Suggested to arrange more of such programs
9	Industrial Visits	No Industrial Visit	-
10	Workshops	No Workshop	-
11	Student counseling	Mentor system is implemented with the ratio of 1:20 Semester wise parents meetings have been conducted.	Action taken records need to be maintained more precisely. During pandemic mentoring is affected. But all the guidance has

		Records are maintained.	been given to students as and when required.
12	Faculty Development Programs	Quality Circle programs have been conducted at department level for teaching and non-teaching staff. Good number of faculties have participated in AICTE organized FDPS. Records are maintained. AY- 2017-2018 NO AY 2018-2019- NO AY 2019-2020- 01 AY 2020-2021 - NO AY 2021-2022 - 02	Department should organize more faculty development programs else Faculty Participation in other courses/STTP /FDP need to increase
13	Infrastructure	Sufficient Infrastructure Classrooms- 07 Labs- 02 Projectors- 02 Laptop- 01	Proper maintenance is done on a regular basis.
14	Self -Learning resources	Below mentioned are the steps taken by department: • Google Classroom • Department Library	Suggested to check availability of virtual labs. Maintain proper records of the department Library collectively.
15	Student Participation	Few students have participated in co-curricular and extra curricular activities. Records are maintained.	Students must be encouraged to participate in inter-collegiate, national and international level competitions.
16	Internal Quality Assurance	Flip Classrooms, role plays, presentations, group discussions techniques are used by the faculties while teaching-learning process.	Suggested to maintain a proper record of it.
17	Placement	NA	-

18	Student – Teacher Ratio	AY- 2017-2018- sem-I-13.125 sem II-15.312 AY 2018-2019- sem-I- 14.0 sem II- 12.0 AY 2019-2020- sem-I- 07 sem II- 08 AY 2020-2021- sem-I- 08 sem II- 07 AY 2021-2022- sem-I-08 sem II-07	Records of Workload Distribution Faculty wise must be maintained.
19	Unique features of Department	• Enough number of research paper publications by faculties. • Enough number of FDP/ATAL/NPTEL/Orientation/refresher programs attended by faculties.	It has to be a continuous policy of the department.
20	Newsletter/ Magazine	NO	-

MCA DEPARTMENT

Year (2020-2021):

Academic Audit Report

Name of the department: MCA

Audit for AY 2020-21 **Date: 30/09/2022**

Remarks by Interdepartmental Audit Committee

1. Efforts taken by staff for syllabus coverage and continuous evaluation are appreciable.
2. As a part of curriculum, bridge courses, MOOC courses are properly recommended.
3. Also, very good work done by department placement coordinator to place students at department level.
4. Faculties must be encouraged to publish papers in UGC care and other reputed journals. It must be continuous policy to upgrade.
5. Faculties must be encouraged to complete NPTEL and ATAL courses.
6. Activities must be done in collaboration with Industry (Functional MoUs).
7. Department is suggested to decide certain policies for internal quality improvement.

Principal

Dr. Arun Kumar

Auditor Name & Signature

Prof. Ashwini Save (HOD Computer Dept)

Prof. Karishma Raut (NAAC coordinator)

Prof. Anojkumar Yadav (Electrical Dept)

Academic Audit Report
A.Y. 2020-21

Academic Audit for AY 2020-21 is carried out by internal audit committee of Master of computer applications.
It is based on code of conduct and actions taken in relation to continuous improvement.

Table 1 Teaching & Learning Process

SEM	Subject	No. Of available hours	No. Of hours engaged	Shortfall	Corrective action	Innovation in teaching method
SEM-1	Mathematical Foundation for Computer Science 1	41	41	-	-	Real-time problem-solving approach
	Advanced JAVA	42	42	-	-	try to establish thinking mode of the students' technical concept, and try to improve the practical ability of the students, Use of PPT
	Advanced Database Management System	35	35	-	-	Practical oriented problem solving, Use of PPT.
	Software Project Management	32	32	-	-	Use of PPT, try to establish ability for developing software project.
SEM-2	Mathematical Foundation for Computer Science 2	46	46	-	-	Creation of videos for different methods
	Artificial Intelligence and machine learning	38	38	-	-	Practical oriented problem solving
	Information Security	37	37	-	-	Use of PPT
	Internet of Things	30	30	-	-	Online Demonstration of theoretical concept, Use of PPT, Multiple links of videos shared for more details of the concepts
	Digital Marketing & Business Analytics	36	36	-	-	Real Life examples in terms of Case Study, Use of PPT & Video

Department of Master of Computer Applications

SEM -I Bridge Course	Programming With C++	24	24	-	-	Practical Demonstration of theoretical concept, Use of PPT
	Data Structures	20	20	-	-	Use of PPT, Practical oriented problem solving.
	Operating System	30	30	-	-	Use of PPT, practical oriented problem solving
	Computer Networks	28	28	-	-	Online Demonstration of theoretical concept, Use of PPT, Multiple links of videos shared for more details of the concepts
	Discrete Mathematics	28	23	5	Syllabus covered in 23 lectures	Real time problem solving approach

Department of Master of Computer Applications

Table 2: Evaluation & Results

SEM	Subject	CO	Target Level	Attainment Level	Observations	Actions need to take
MCA11	Mathematical Foundation for Computer Science I	MCA11.1	2.75	2.95	Students will be able to analyze statistical data with various methods, can find or assume the probability for specific incidence and can predict the outcome, students can create various hypotheses and predict the value for the database.	Continue with similar kind of efforts
		MCA11.2	2.8	2.9		
		MCA11.3	2.75	2.9		
		MCA11.4	2.75	2.9		
		MCA11.5	2.75	2.9		
		MCA11.6	2.8	2.9		
MCA12	Advanced Java	MCA12.1	2.57	2.9	Students will be able to demonstrate use of data structure and data manipulation concepts using Java Collection Framework and Lambda expressions, create JSP using standard actions, custom tags, (JSTL) and JSTL Tags. Students will be able to demonstrate create Spring Boot Web Application and Spring Boot RESTful Web Services.	Continue with similar kind of efforts
		MCA12.2	2.57	3		
		MCA12.3	2.85	2.8		
		MCA12.4	2.8	3		
		MCA12.5	2.57	2.4		
		MCA12.6	2.57	2.4		

Department of Master of Computer Applications

MCA 13	Advanced Database Management System	MCA13.1	2.25	2.6	Students will be able to model data warehouse using ETL process and perform data analysis using OLAP operations. They have knowledge about Data Mining and different preprocessing techniques. They can now able to analyze data using different data mining algorithms.	Continue with similar kind of efforts
		MCA13.2	2.4	2.9		
		MCA13.3	2.5	2.9		
		MCA13.4	2.4	2.86		
		MCA13.5	2.75	3		
		MCA13.6	2.2	2.8		
		MCA13.7	2.33	2.4		
MCA 14	Software Project Management	MCA13.1	2	3	Students will be able to define the key concepts of Software Project Management, model, estimation of software size as well as cost of software. Scheduling implementation develop process for successful quality project delivery	Continue with similar kind of efforts
		MCA13.2	2.5	2.86		
		MCA13.3	2.42	2.93		
		MCA13.4	2.2	3		
		MCA13.5	2.25	2.86		
		MCA13.6	2.25	2.4		
		MCA13.7	2.33	2.4		
MCAL11	Data Structures Lab with C and / C++	MCA13.1	2.4	3	Students will be able to effectively choose the data structure that efficiently model the information in a Problem, able to implement Sorting and Searching algorithms. Able to describe how linear data structures and Non-linear Data Structures and their applications, able to apply the Hash data structure.	Continue with similar kind of efforts
		MCA13.2	2.6	3		
		MCA13.3	2.6	3		
		MCA13.4	2.6	3		
		MCA13.5	2.6	3		
		MCA13.6	2.6	3		
		MCA13.7	2.6	3		
MCAL12	Advanced Java Lab	MCA12.1	2.57	3	Students will be able to demonstrate use of data structure and data manipulation concepts using Java Collection Framework and Lambda expressions, able to build a JSP web application using standard actions, custom tags and JSTL Tags, able to develop applications	Continue with similar kind of efforts
		MCA12.2	2.57	3		
		MCA12.3	2.57	3		
		MCA12.4	2.57	3		
		MCA12.5	2.57	3		

Department of Master of Computer Applications

		MCA12.6	2.57	3	using Spring Framework, Lightweight Containers and Dependency Injection with Spring, able to develop Spring Boot Web Application and Spring Boot RESTful web services.	
MCAL13	Advanced Database Management System Lab	MCA13.1	3	2	Students will be able to work with ORDBMS, Analyze and manage the database with Pentaho, can implement and analyze various datamining algorithms using R	More practice of Practical Problems
		MCA13.2	3	2		
		MCA13.3	3	2		
		MCA13.4	3	2		
		MCA13.5	3	2		
		MCA13.6	3	2		
		MCA13.7	3	2		
		MCA13.8	3	2		
MCAL14	Web Technologies Lab	MCAL14.1	2.8	3	Students will be able to understand the use of Node JS and Angular JS with Setup Development Environment & Installation on windows and implementing various web programs for we application development. At the end students were able to design web page using open source web technologies.	Continue with similar kind of efforts
		MCAL14.2	2.8	3		
		MCAL14.3	2.83	3		
		MCAL14.4	2.8	3		
		MCAL14.5	2.8	3		
		MCAL14.6	2.8	3		
		MCAL14.7	2.8	3		
		MCAL14.8	2.83	3		
MCAP11	Mini Project 1-A	MCAP11.1	2	3	Students will be able to apply software project management skill during project work and they will build small groups to work effectively in team on medium scale computing projects. Students can design and evaluates complex problems they will produce technical documents.	Continue with similar kind of efforts
		MCAP11.2	2	3		
		MCAP11.3	2	3		
		MCAP11.4	2	3		

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Department of Master of Computer Applications

MCA21	Mathematical Foundation for Computer Science 2	MCA21.1	2.75	3	Students will be able to Formulate mathematical models for a broad range of real time problems in business and industry and also to apply mathematics and mathematical modeling to forecast implications of various choices in real world problems. They are able to think strategically and decide the optimum alternative from various available options	Continue with similar kind of efforts
		MCA21.2	2.75	2.93		
		MCA21.3	2.75	2.9		
		MCA21.4	2.66	2.9		
		MCA21.5	2.75	3		
		MCA21.6	2.75	2.9		
MCA22	Artificial Intelligence and Machine Learning	MCA22.1	2.7	3	Students will be able to understand and apply various AI oncepts in real time Scenerio,they understood mathematical aspect of Machine learning algorithms.	Continue with similar kind of efforts
		MCA22.2	3	3		
		MCA22.3	3	3		
		MCA22.4	3	3		
		MCA22.5	3	3		
		MCA22.6	3	2.4		
		MCA22.7	2.75	2.9		
MCA 23	Information Security	MCA23.1	2.6	3	Students will be able to understand the concepts of Information Security, cryptography and its applications. Now they are able to analyze authentication and integrity techniques which are available. They can also able to interpret the importance of firewalls and intrusion detection systems and signatures.	Continue with similar kind of efforts
		MCA23.2	2.5	2.93		
		MCA23.3	2.75	3		
		MCA23.4	2.6	3		
		MCA23.5	2.6	3		
		MCA23.6	2.3	2.4		
MCAE242	Internet of Things	MCAE242.1	2.8	3	Students were able to understand the concepts of IoT systems and also trying to implement various models using	Continue with similar kind of efforts
		MCAE242.2	2.75	2.8		

Department of Master of Computer Applications

		MCAE242.3	2.75	2.8	sensors, switch boards, Audirno etc. At the end of the semester , they were now familiarize with the various devices used in the IoT systems. Also, students were able to design a project based on IoT System.	
		MCAE242.4	2.8	2.4		
		MCAE242.5	2.8	2.8		
		MCAE242.6	2.75	2.4		
MCAE254	Digital Marketing and Business Analytics	MCAE254.1	2.75	2.8	Students were able to examine and explore the role and importance of Digital Marketing in the current business scenario. They were now familiarize with the various Digital Marketing Tools. They can apply this tool to design Digital Marketing Campaigns and measure their effectiveness.	Continue with similar kind of efforts
		MCAE254.2	2.5	2.9		
		MCAE254.3	2.5	2.93		
		MCAE254.4	2.5	2.9		
		MCAE254.5	2.6	2.9		
		MCAE254.6	2.5	2.8		
MCAL21	Artificial Intelligence and Machine Learning Lab	MCAL21.1	3	3	Students will be able to apply various AI based techniques ,Students will be able to implement different machine learning algorithms as well as deployment of classification ML model	Continue with similar kind of efforts
		MCAL21.2	3	3		
		MCAL21.3	3	3		
		MCAL21.4	3	3		
		MCAL21.5	3	3		
		MCAL21.6	3	3		
		MCAL21.7	3	3		
		MCAL21.8	3	3		
		MCA21.9	3	3		
MCAL22	Soft Skill Development Lab	MCAL22.1	3	3	Students will inculcate the essential skills that professionals need to distinguish themselves and make a positive impact on their work and social lives. Students can understand corporate culture and improve their etiquettes, interpersonal skills and professional image.	Continue with similar kind of efforts
		MCAL22.2	3	3		
		MCAL22.3	3	3		
		MCAL22.4	3	3		
		MCAL22.5	3	3		
		MCAL22.6	3	3		
		MCAL22.7	3	3		
MCALE232	Internet of Things Lab	MCALE23.1	2.75	3	Students will be able to apply various IoT based techniques using Ardunio Board with real time example. Students will be able to deploy IoT Projects.	Continue with similar kind of efforts
		MCALE23.2	2.8	3		
		MCALE23.3	2.8	3		
		MCALE23.4	2.8	3		
		MCALE23.5	2.8	3		
		MCALE23.6	2.8	3		
MCAL24		MCAL24.1	2.5	3		

Department of Master of Computer Applications

	Skill based Lab Course AWT Lab	MCAL24.2	2.5	3	Students will be able to develop web applications and implement MVC architecture and develop web application using AJAX concepts	Continue with similar kind of efforts
		MCAL24.3	2.5	3		
		MCAL24.4	2.5	3		
		MCAL24.5	2.5	3		
		MCAL24.6	2.5	3		
MCAL25	Skill based Lab Course User Interface Lab	MCAL25.1	2.64	3	Students will be able to Interpret user needs and context of User Interface design Specification and also able to Develop a high fidelity prototype for end to end solution. Students will be able to Apply best practices for evaluating user experience	Continue with similar kind of efforts
		MCAL25.2	2.64	3		
		MCAL25.3	3	3		
		MCAL25.4	3	3		
		MCAL25.5	3	3		
		MCAL25.6	3	3		
		MCAL25.7	2.85	3		
MCAL26	Skill based Lab Course Networking with Linux Lab	MCAL26.1	2.6	3	Students will be able to install Network Simulation tool on Linux. Construct network topologies analyze network traffic using network sniffing software. Design and develop solutions to complex network problems	Continue with similar kind of efforts
		MCAL26.2	2.5	3		
		MCAL26.3	2.8	3		
		MCAL26.4	2.6	3		
		MCAL26.5	2.7	3		
MCAP211	Mini Project – 1B	MCAP21.1	2	3	Students will be able to apply software project management skill during project work and they will build small groups to work effectively in team on medium scale computing projects. Students can design and evaluates complex problems they will produce technical documents.	Continue with similar kind of efforts
		MCAP21.2	2	3		
		MCAP21.3	2	3		
		MCAP21.4	2	3		
MCABR1	Programming With C++	MCABR1.1	2.5	2.1	Students were able to understand Object oriented programming concepts and their application. They can also Implement programming concepts to solve bigger problems.	More practice of theoretical and programing concepts will be taken.
		MCABR1.2	2.4	2.2		
		MCABR1.3	2.4	2.2		
		MCABR1.4	2.4	1.6		

Department of Master of Computer Applications

MCA BR2	Data Structures	MCABR2.1	2.4	2.86	Students will be able to Effectively choose the data structure that efficiently model the information in a Problem, able to implement Sorting and Searching algorithms, Able to describe how Linear data structures and Non-linear Data Structures and their applications, able to apply the Hash data structure.	More practice of theoretical and programing concepts will be taken.
		MCABR2.2	2.6	3		
		MCABR2.3	2.6	2.9		
		MCABR2.4	2.6	3		
		MCA BR2.5	2.6	2.4		
MCABR3	Operating System	MCABR3.1	2.4	3	Students will be able to understand different types of operating systems and be able to analyze thread and process management function of operating system, thread management, memory management, concurrency control mechanisms ,operating system security concepts.	More practice of theoretical and programing concepts will be taken.
		MCABR3.2	2.4	3		
		MCABR3.3	2.4	2		
		MCABR3.4	2.4	2		
		MCABR3.5	2.4	2		
MCABR4	Computer Networks	MCABR4.1	2.6	3	Students were able to understand the concepts of Networking and communications with various protocols. They were also able to remember the concepts of various models & topologies for the various perspective of computer networks.	Continue with similar kind of efforts
		MCABR4.2	2.8	3		
		MCABR4.3	2.8	3		
		MCABR4.4	2.6	3		
		MCABR4.5	2.8	3		

Department of Master of Computer Applications

MCA BR5	Discrete Mathematics	MCABR5.1	2.5	2.93	Student will be able to develop mathematical, logical thinking and different ideas of discrete mathematics	With more practice try to achieve target level
		MCABR5.2	2.5	2.9		
		MCABR5.3	2.5	2.4		

HOD MCA

VIVA INSTITUTE OF TECHNOLOGY At: Shirgaon Post: Virar, Tal.: Vasai, Dist. Palghar VIRAR (EAST)

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