Shri. Shivaji Education Society, Amravati's
Science College, Nagpur
Internal Academic Audit 2018-19

(Information to be submitted by Head of the Department for Internal Academic Audit)

Department: Physics **Period of assessment: Session: 2018-19**

CRITERION I – CURRICULAR ASPECTS

1.1 Certificate/ Diploma Courses introduced during the Academic year

Name of the Certificate Course	Name of the Diploma Courses	Date of introduction and duration	focus on employability/ entrepreneurship	Skill development
-	-	-	-	-

1.2. New programmes/courses introduced during the Academic year

Programme with Code	Date of Introduction	Course with Code	Date of Introduction
-	-	-	-

1.3 Students enrolled in Certificate/ Diploma Courses introduced during the year

	Certificate	Diploma Courses
No of Students	-	-

1.4 Value-added courses imparting transferable and life skills offered during the year

Value added courses	Date of introduction	Number of students enrolled
Certificate and **Diploma** course in Mathematical modeling using Maple	2013-14	Certificate-32 Diploma-21

Project/Programme Title	No. of students enrolled for Field Projects / Internships
-	-

1.5 Field Projects / Internships under taken during the year

Year	Number of students enrolled in the subject (UG)	Number of students enrolled in the subject (PG)	Number of full time teachers available in the department teaching only UG courses	Number of full time teachers available in the department teaching only PG courses	Number of teachers teaching both UG and PG courses
2018-19	463	42	5	3	8

CRITERION II -TEACHING-LEARNING AND EVALUATION

Number of teachers on roll	Number of teachers using ICT *(LMS, e-Resources)*	ICT tools and resources available	Number of ICT enabled classrooms	Number of smart classrooms	E-resources and techniques used
2	2	12 computers, 2 projectors	1	1	Audio visual aids TV

Number of students enrolled in the Department	Number of fulltime teachers	Mentor: Mentee Ratio
505	02+06=08	505:8 i.e. 63:1

2.1. Student - Full time teacher ratio (current year data): 505:8

2.2 No of teachers using ICT for effective teaching with Learning Management Systems (LMS), E-learning resources etc. (current year data) : 04

2.3 Students mentoring system available in the Department? Yes

2.4. Number of full time teachers appointed during the year

No. of sanctioned positions	No. of filled positions	Vacant positions	Positions filled during the current year	No. of faculty with Ph.D
8	2	6	0	2

2.5 Honours and recognitions received by teachers *(received awards, recognition, fellowships at State, National, International level from Government, recognized bodies during the year)*

Year of award	Name of full time teachers receiving awards from state level, national level, international level	Designation	Name of the award, fellowship, received from Government or recognized bodies
2019	*Dr. S. W. Anwane*	*Head and Associate Professor*	*Ambassador of Maple for SAARC region*

2.6 Pass percentage of students

Programme Code	Programme name	Number of students appeared in the **final** year examination	Number of students passed in final semester/year examination	Pass Percentage (%)
	B.Sc.	156	147	93.58
	M.Sc.	16	10	62.50

CRITERION III – RESEARCH, INNOVATIONS AND EXTENSION

3.1. Research funds sanctioned and received from various agencies, industry and other Organizations

Nature of the Project	Duration	Name of the funding Agency	Total grant sanctioned	Amount received during the Academic year
Major projects	-	-	-	-
Minor Projects	-	-	-	-
Interdisciplinary Projects	-	-	-	-
Industry sponsored Projects	-	-	-	-
Projects sponsored by the University/ College	-	-	-	-
Students Research Projects *(other than compulsory by the College)*	-	-	-	-
International Projects	-	-	-	-
Any other(Specify)	-	-	-	-
Total	-	-	-	-

3.2 Workshops/Seminars Conducted on Intellectual Property Rights **(IPR)** and Industry-Academia Innovative practices during the year

State	National	International
-	-	-

Title of Workshop/Seminar	Date(s)
Seminar on Ultrasonics by Dr. Vilas Tabhane	1st October 2018
Seminar by Dr. R V Joat on Classical Mechanics	31st December 2018
Guest lecture by Anju Pakhale on Fiber optics and Nuclear Physics	19th January 2019
Invited Talk by Dr. Balasaheb Deshmukh on "Opportunity for Science Students"	25th January 2019
Workshop conducted on relativity by Dr. S. W. Anwane	9th February 2019

3.3 Awards for Innovation won by Institution/Teachers/Research scholars/Students during the Year

Title of the innovation	Name of the Awardee	Awarding Agency	Date of Award	Category
-	-	-	-	-

3.4 No of teachers who receive recognition/awards: 1

3.5 Ph. Ds awarded during the year *(applicable for PG College, Research Center)*

Name of the Department	No. of Ph. Ds Awarded
Physics	1

3.6 Research Publications in the Journals notified on UGC website during the year

	Department	No. of Publication	Average Impact Factor, if any
National	Physics	-	-
International		02	-

3.7 Books and Chapters in edited Volumes / Books published, and papers in National/International Conference Proceedings per Teacher during the year

Department	No. of publication
-	-

3.8 Bibliometrics of the publications during the last Academic year based on average citation index in Scopus/ Web of Science or Pub Med/ Indian Citation Index

Title of the paper	Name of the author	Title of the journal	Year of publication	Citation Index	Institutional affiliation as mentioned in the publication	Number of citations excluding self citations
Enhanced photoluminescence properties of electrospun Dy^{3+}-doped ZnO nanofibres for white lighting devices	C N Pangul, S W Anwane, S B Kondawar	Luminescence	2018	-	Department of Physics, Shivaji Science College, Nagpur, India	-

3.9 h-index of the Institutional Publications during the year. (based on Scopus/ Web of science)

Title of the paper	Name of the author	Title of the journal	Year of publication	h-index	Number of citations excluding self citations	Institutional affiliation as mentioned in the publication
Enhanced photoluminescence properties of electrospun Dy^{3+}-doped ZnO nanofibres for white lighting devices	C N Pangul, S W Anwane, S B Kondawar	Luminescence	2018	1	-	Department of Physics, Shri Shivaji Science College, Nagpur

3.10 Faculty participation in Seminars/Conferences and Symposia during the year:

No. of Faculty	International level	National level	State level	Local level
Attended Seminars/ Workshops	2	2	-	-
Presented papers	2			
Resource Persons				

3.11 Number of extension and outreach programmes conducted in collaboration with industry, community and Non- Government Organizations through during the year

Title of the Activities	Organizing unit/ agency/ collaborating agency	Number of teachers co-ordinated such activities	Number of students participated in such activities

3.12 Awards and recognition received for extension activities from Government and other recognized bodies during the year

Name of the Activity	Award/recognition	Awarding bodies	No. of Students benefited

3.13 Students participating in extension activities with Government Organizations, Non-Government Organizations and programmes such as Swachh Bharat, Aids Awareness, Gender Issue, etc. during the year

Name of the scheme	Organising unit/ agency/ collaborating agency	Name of the activity	Number of teachers **coordinated** such activities	Number of students participated in such activities

3.15 Number of Collaborative activities for research, faculty exchange, student exchange during the year

Nature of Activity	Participant	Source of financial support	Duration
National School on Spectroscopic technique	**6**	Advance materials research society, Shivaji Science college and M P Deo Memorial Dharampeth Science college	**5 days**

3.16 Linkages with institutions/industries for internship, on-the-job training, project work, sharing of research facilities etc. during the year

Nature of linkage	Title of the linkage	Name of the partnering institution/ industry /research lab with contact details	Duration **(From-To)**	Participant

3.5.3 MoUs signed with institutions of national, international importance, other universities, industries, corporate houses etc. during the year

Organisation	Date of MoU signed	Purpose and Activities	Number of students/teachers participated under MoUs
Vidyabharti Mahavidyalaya Amravati	17/01/2019	Faculty and facility exchange	**2**

CRITERION IV – INFRASTRUCTURE AND LEARNING RESOURCES

4.1.2 Details of augmentation in infrastructure facilities during the year		
Facilities	Existing	Newly added
Laboratories	5	-
No. of important equipments purchased (≥ 1-0 lakh) during the current year.		-
Value of the equipment purchased during the year (Rs. in Lakhs)	-	-
Others	-	-

4.3.4 E-content developed by teachers such as: e-PG-Pathshala, CEC (under e-PG-Pathshala CEC (Under Graduate) SWAYAM other MOOCs platform NPTEL/ NMEICT /any other Government initiatives & institutional (Learning Management System (LMS) etc			
Name of the teacher	Name of the module	Platform on which module is developed	Date of launching e – content
Dr. S. W. Anwane	B.Sc. paper - 2 transient current Mobile app - Physics Pro	https://play.google.com/store/apps/details?id=com.physicspro.bhushandhapodkar.physicspro	2/11/2019
	CoC Maple –e content	https://www.youtube.com/channel/UCl3VJHctc2dwZZNLy5VS97w?view_as=subscriber	11/10/2012

CRITERION V - STUDENT SUPPORT AND PROGRESSION

5.1.2 Number of capability enhancement and development schemes such as Remedial coaching, Bridge courses, Personal Counselling and Mentoring etc.,

Name of the capability enhancement scheme	Date of implementation	Number of students enrolled	Agencies involved

5.2.2 Student progression to higher education in percentage during the year

Year	Number of students enrolling into higher education	Programme graduated from	Department graduated from	Name of institution joined	Name of Programme admitted to

5.2.3Students qualifying in state/ national/ international level examinations during the year (eg: NET/SET/SLET/GATE/GMAT/CAT/GRE/TOFEL/Civil Services/State Government Services)

Items	No. of Students selected/ qualifying	Registration number/roll number for the exam
NET	-	-
SET	-	-
SLET	-	-
GATE	-	-
GMAT	-	-
CAT	-	-
GRE	-	-
TOFEL	-	-
Civil Services	-	-
State Government Services	-	-
Any Other	-	-

5.3.2 No. of enrolled Alumni of the department:

CRITERION VI –GOVERNANCE, LEADERSHIP AND MANAGEMENT

6.3.3 No. of teachers attending professional development programmes, viz., Orientation Programme, Refresher Course, Short Term Course, Faculty Development Programmes during the year

Title of the professional development programme	Number of teachers who attended	Date and Duration (from – to)

6.4.2 Funds / Grants received from management, non-government bodies, individuals, philanthropies during the year(not covered in Criterion III)

Name of the non government funding agencies/ individuals	Funds/ Grants received in Rs.	Purpose

CRITERION VII – INSTITUTIONAL VALUES AND BEST PRACTICES

7.1.4 Inclusion and Situatedness						
Enlist most important initiatives taken to address locational advantages and disadvantages during the year						
Year	Number of initiatives to address locational advantages and disadvantages	Number of initiatives taken to engage with and contribute to local community	Date and duration of the initiative	Name of the initiative	Issues addressed	Number of participating students and staff

7.1.6 Activities conducted for promotion of universal Values and Ethics

Activity	Duration (from-------to-------)	Number of participants

7.1.7 Initiatives taken by the department to make the campus eco-friendly

7.2 Best Practices: Describe at least two best practices of the department

7.3 Institutional Distinctiveness: Provide the details of the performance of the department in one area distinctive to its vision, priority and thrust

Provide the web-link of the institution in not more than 500 words

Physics teacher's e-class honing industry specific skills - http://toi.in/Kct0pa/a31gj

Following is the content of news item:

Nagpur: A physics professor of Shivaji Science College has created a 'flipped classroom' to run University Grants Commission (UGC) sponsored career-oriented course (CoC) in mathematical modelling that is helping BSc and MSc students hone industry-specific skills without having the need to attend separate classes or stay back after regular lectures.

Conceived in 2013-14 by Shyamkant Anwane, the professor has trained 150 students in the last five years while 140 alone joined the one-year programme this time. According to the professor, the flipped classroom allows them to do away with the monotonous theoretical part while students explore their creativity in the Maple lab during their free time in college. During the certificate/diploma course, students are taught the mathematical software Maple used in computing complicated equations, data analysis and plotting 2D or 3D graphical functions.
"Generally, students need to take up additional course after or during their degree programmes to learn the software. The syllabus is approved by the Nagpur University. However, students are encouraged to be innovative by applying ideas coming in their minds," Anwane said. Anwane said the initiatives by college's department of Physics is limited to its students but from next year, the doors would be opened for outsiders as well. "Learning physics along with Maple is certainly mould young minds to be innovators. We have been encouraging students to execute new ideas and never hesitate to open up for discussions," he said. In the academic session 2018-19 we plan to reach to maximum students through this CoC in the form of Flipped e-Classroom. We have uploaded SIX Video Lectures on Maple on YouTube which the students should listen to before reporting to the Maple Laboratory for hands-on experience. Some PDF worksheets on Maple are also made available on Google Drive. Talking about teaching method, Anwane said students need to register online and subscribe the Youtube channel. But, those not having access to smartphones or internet are given hard copies. "Whenever students have free slots or off lectures, they hear the lectures. So there is no need to follow a timetable. We are maintaining the attendance in the lab along with their YouTube activity to ensure they go through the study material," he said. At the end of session, written and practical exams are conducted before awarding the diploma.

Why flipped classroom?
In flipped classroom study material is provided pre-hand to the students. Students can go through it as many times as they need until satisfied UNLIKE in traditional class-room where the teachers delivery is one-shot. Pre-hand involvement of students ensures meaningful interaction with the teacher later. Discussion on various points as well as problem solving

8. Future Plans of action for next academic year (500 words)

1. To start career oriented course.

2. Expand existing value added courses for students of other colleges.

3. To install state-of-the –art e-class room that can cater recording feature for Video Lectures.

4. To motivate students for preparing models for exhibition.

Signature of the Head / Coordinator of the Department

Name: **Dr. S. W. Anwane**

Date: 26/04/2019