NARAYANA ENGINEERING COLLEGE ::GUDUR

DHURJATI NAGAR, GUDUR – 524101, A.P.

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DEPARTMENT OF MECHANICAL ENGINEERING

Monthly Activities Conducted for the month of September

September -2019:

S. No.	Date	Activity	Resource Person	Involved By
1.	27/09/2019	Workshop on "**ADDITIVE MANUFACTURING**"	Dr. M. KedarMallik	Final year students and Government Polytechnic College students
2.	16/09/2019 To 21/09/2019	Workshop on " **ROBOT STUDIO VALUE ADDED COURSE "**	Mr. Chaitanya Kumar Mr. Lokanatham	III Year
3.	16/09/2019 To 21/09/2019	Workshop on "**NC PROGRAMMING VALUE ADDED COURSE**"	Mr. Chaitanya Kumar	IV Year

NARAYANA ENGINEERING COLLEGE

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Dhurjati Nagar, GUDUR, Andhra Pradesh-524101

MECHANICAL ENGINEERING

No: Mech/NECG/Report   Dated: 27/09/2019

Report on ADDITIVE MANUFACTURING at NECG for Final year students and Government Polytechnic College, Gudur

DATE: 26th September 2019

Mechanical Engineering department of Narayana Engineering College, Gudur had organized a one day Workshop on "**ADDITIVE MANUFACTURING**" technology for the engineering students. The main aim was to provide students an exposure to the concepts of the latest printing technology in the world. Dr. M. KedarMallik introduced the students about the latest trends of **Additive Manufacturing**; he discusses in detail the difference between ordinary printing and the new 3D printing.

Additive manufacturing (AM), refers to processes used to create a three-dimensional object in which layers of material are formed under computer control to create an object. Objects can be of almost any shape or geometry and are produced using digital model data from a 3D model or another electronic data source such as an Additive Manufacturing File (AMF) file. STL is one of the most common file types that 3D printers can read. Thus, unlike material removed from a stock in the conventional machining process, 3D printing or AM builds a three-dimensional object from a computer-aided design (CAD) model or AMF file by successively adding material layer by layer.

Our speaker explained ADDITIVE MANUFACTURING in a lucid language which is understood by the common students. The term "3D printing" originally referred to a process that deposits a binder material onto a powder bed with inkjet printer heads layer by layer. More recently, the term is being used in popular vernacular to encompass a wider variety of additive manufacturing techniques. The United States and global technical standards use the official term additive manufacturing for this broader sense defines seven categories of AM processes within its meaning: binder jetting, directed energy deposition, material extrusion, material jetting, and powder bed.

He also demonstrated the 3D printer before the students on the actual printer. Printing a 3D model from an STL file, it must first be examined for errors. Most CAD applications produce errors in output STL files: holes faces normal, self-intersections, noise shells or manifold errors. A step in the STL generation known as "repair" fixes such problems in the original model. Generally, STLs that have been produced from a model obtained through 3D scanning often have more of these errors. This is due to how 3D scanning.

He also discussed the present scenario of 3D printing technology in the world market and how it is important to budding engineers to learn the latest technology. As of October 2016, additive manufacturing systems were on the market that ranged from Rs 60000 to Rs 500,000 in price and was employed in industries including aerospace, architecture, automotive, defense, and medical replacements, among many others. For example, General Electric uses the high-end model to build parts for turbines. Many of these systems are used for rapid prototyping before mass production methods are employed. Higher education has proven to be a major buyer of desktop and professional 3D printers.
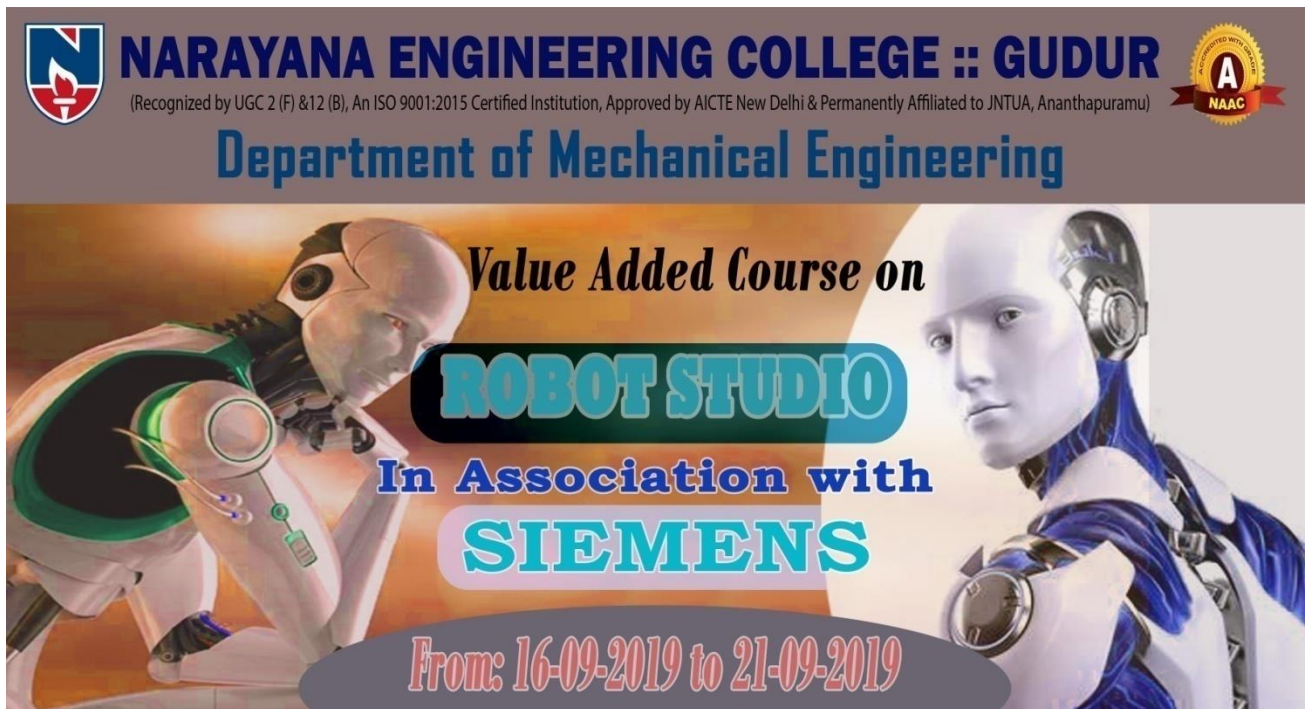
More than 100 students from the final year and Government Polytechnic college students took the benefit of the workshop. The students showed great interest and enthusiasm in understanding the working of different designs that can be possible on the 3D printer which is not possible on an ordinary printer. The inaugural function was graced by Principal Dr. CHVS ParameswaraRao, Mechanical-Head of the Department Prof. B.V. Krishnaiah, Dr. V. SrinivasViswanath (Innovation and Incubation Cell- Professor Incharge) for the workshop who was the inspiration behind arranging the workshop. The workshop memento was handed over to Dr. M. KedarMallik by the hands of Dr. CHVS ParameswaraRao. Dr. V. SrinivasViswanath proposed a vote of thanks and concluded the workshop.

Robot Studio Workshop 2019

Organized by Department of Mechanical Engineering, Narayana Engineering College in association with

APSSDC-Siemens

Venue: ***Narayana Engineering College***–16th to 21st September 2019

Details about Workshop

Subject: - **Introduction to Robotics and related software.**

How it will be useful to students: - There is considerable anecdotal evidence that students respond well in subjects involving the programming of robots. Programming can be too abstract. By having to control a physical robot and seeing what goes wrong, students learn what robots can and can't do. They also learned the need for precise instructions. There's no doubt that there will be a need for people to be involved in programming mechanical devices in the foreseeable future. By programming robots, students can discover if they have aptitude and interest in the job market of the future.

What skills will be developed: - Programming Skill will be developed. They will read data from the board, on sensor and social network.

Branch: - Mechanical.
Year: - III Year

Date: - 16th September 2019 to 22nd September 2019
Venue: - CAD Laboratory, Narayana Engineering College, Gudur.
Total Entries:-50

Introduction

These technologies are used to develop machines that can substitute for humans. Robots can be used in any situation and for any purpose, but today many are used in dangerous environments (including bomb detection and de-activation), manufacturing processes, or where humans cannot survive. Robots can take on any form but some are made to resemble humans in appearance. This is said to help in the acceptance of a robot in certain replicative behaviors usually performed by people. Such robots attempt to replicate walking, lifting, speech, cognition, and basically anything a human can do. Many of today's robots are inspired by nature, contributing to the field of bio-inspired robotics.

The concept of creating machines that can operate autonomously dates back to classical times, but research into the functionality and potential uses of robots did not grow substantially until the 20TH century. Throughout history, it has been frequently assumed that robots will one day be able to mimic human behavior and manage tasks in a human-like fashion. Today, robotics is a rapidly growing field, as technological advances continue; researching, designing, and building new robots serve various practical purposes, whether domestically, commercially, or militarily. Many robots are built to do jobs that are hazardous to people such as defusing bombs, finding survivors in unstable ruins, and exploring mines and shipwrecks. Robotics is also used in STEM (Science, Technology, Engineering, and Mathematics) as a teaching aid.

APPLICATIONS.

Current and potential applications include:

- Military robots

- Caterpillar plans to develop remote-controlled machines and expects to develop fully autonomous heavy robots by 2021. Some cranes already are remotely controlled.

- It was demonstrated that a robot can perform a herding task.

- Robots are increasingly used in manufacturing (since the 1960s). In the auto industry, they can amount for more than half of the "labor". There are even "lights off" factories such as an IBM keyboard manufacturing factory in Texas that is 100% automated

- Robots such as HOSPIare used as couriers in hospitals (hospital robots). Other hospital tasks performed by robots are receptionists, guides, and porters helpers.

- Robots can serve as waiters and cooks also at home. Boris is a robot that can load a dishwasher.

- Robot combat for sport – hobby or sports event where two or more robots fight in an arena to disable each other. This has developed from a hobby in the 1990s to several TV series worldwide.

A BRIEF DISCUSSION OF ROBOTICS WORKSHOP.

Department of Mechanical Engineering, Narayana Engineering College, Gudur has organized a one week workshop on Robotics on Dates16th September 2019 to 21st September 2019 in the CAD Laboratory. Mr. Chaitanya Kumar and Mr. Lokanatham delivered the course to the students. Mr. Lokanatham shown PPT and demonstrated the robots. Around 50 students had participated in the workshop (3rdyear students of Mechanical Engineering Branch). The workshop begins with introductory video clips on the subject of how robots are used in today's ever-growing manufacturing industry.

These videos define the many characteristics of the three generations of robots beginning with the 1980s in the automotive assembly lines. It demonstrates the many different programmable robots that are used and articulates clearly their unique qualities. The demonstration program started after completion of PPT and videos all the students saw and learned how the robot is actually working.

Contents of the course:

1	Introduction to Robotics
2	Basic Components of Robotics
3	Robot Studio Interface

4	Modeling and path planning in the Robot studio
5	Rapid Programming structure
6	Move instructions in Rapid
7	Flex pendent
8	Creating digital signals
9	Pick and place operations activity
10	Backup and restore in Robot studio

LEARNING OUTCOMES.

- Students will gain an appreciation of the effort needed in construction and have a sense of achievement with something they have made.
- Students are encouraged to try their hand at assembling and modeling of Robots.
- This is a creative approach to the learning of science through real-life exposure, mechanical innovation and simultaneously promotes to do hands-on projects on Robots.

CONCLUSION.

- Students learned about robots and assembly.

- Students will be able to participate in the Technical Festival and Robotic events organized by IITs, NITs, and Institute of National repute. This, in turn, will enhance the name and fame of our Institution.

After lunch, on 21st September 2019, a valedictory function was arranged in the presence of   Dr. CHVS Parameswara Rao (Principal, Narayana Engineering College, Gudur), Prof. B.V. Krishnaiah (Head of Mechanical Engineering Department) and Dr. V. SrinivasViswanath (Associate Professor-Mechanical Engineering). In the valedictory function, participants shared their feedback for the last six days of STTP. Then mementos were distributed to trainers as a token of gratitude by Dr. CHVS Parameswara Rao and Prof. B.V. Krishnaiah to the participants. After this coordinator of the STTP. Dr. V. SrinivasViswanath expresses the vote of thanks and the last program ended with the national anthem.

NC PROGRAMMING VALUE ADDED COURSE 2019 REPORT

Venue: *Narayana Engineering College*–16th to21stSeptember2019

NC-PROGRAMMING CERTIFICATION PROGRAMME

Mechanical Engineering Department of Narayana Engineering College, Gudur (**MECH-NECG**) in association with **Andhra Pradesh State Skill Development Corporation (APSSDC)** organized a one Week Certification program on "**NC-PROGRAMMING**" for B. Tech Final year Mechanical Engineering students from 16th September 2019 to 21st September 2019 to explore the power and simplicity of **NC-PROGRAMMING**.

Dr. CHVS Parameswara Rao, Principal of Narayana Engineering College, Gudur addressed the students and stated the importance of **NC-programming** and how important these Certificates in the job market for one's career.

Prof. B.V Krishnaiah, HOD, Mechanical Engineering enlighten the students with his speech by expressing the importance of the latest technologies in the current market and also instructed them to follow the hands-on session carefully to get maximum out of it.

Dr. V. Srinivas Viswanath, Associate Professor, suggested that the students can add **NC-PROGRAMMING** as an additional skill in their technical skill set.

Resource persons Chaitanya Kumar and Lokanatham from Siemens-APSSDC have addressed the students about the importance of **NC-programming** in present-day manufacturing and revealed the course content which will be covered during the One Week Certification course.

About the Course:

The benefits of the digitalization of machine tools as a response to rapid change in consumer behavior in our society are well known. As such, it is crucial that applications based on digitalization work their way into job descriptions – and therefore NC Programming. The challenge here is that the umbrella term of digitalization encompasses a variety of different ways to optimize the NC programming processes. For NC training facilities, the challenge lies in ensuring that this broad topic is addressed in an in-depth manner and that NC training is based upon concrete digitalization applications that trainees will encounter in their workplaces. It is necessary that a certain depth of knowledge is acquired in these applications.

Use the knowledge from the areas of NC programming, materials, and economic machining; obtain additional qualifications in the field of additive manufacturing processes; and find out about the behavior of new materials that are suitable for additive manufacturing. It is highly likely that the 3D printing head will become an additional machine tool in your milling and turning centers, or that you will be operating CNC-controlled machines for additive manufacturing alongside the milling and turning centers used in production – and combining the various technologies in the manufacturing processes.

Lecture Session: Every day starts with an expert lecture of Prof. Chaitanya Kumar (Engineering Consultant cum Trainer APSSDC-Siemens) on some new concepts of NC programming. He discussed different coding methods and use them in various real applications with NC-Software. He also explained the NC programming concept deeply and simulated with part programming software to show how it will useful for CNC machining applications.

Module No.	Particulars
I.	**COORDINATE SYSTEMS**
	Cartesian coordinate
	Polar coordinate
	Absolute & Incremental Dimensioning
II.	**Turning Basic Programming**
	Facing
	a. Turning / Step turning
	b. Radius Turning
	c. Taper Turning(Chamfer)
	d. all the above three combined programs
III.	**TURNING CYCLES**
	a. Stock Removal Cycle

	b. Grooving
	c. Undercut
	d. Threading
	g. Drilling

Laboratory Session: During laboratory session participants practiced NC program toolbox, they understand the importance and effectiveness of the NC programming tools. They also use the mathematical concept with NC programs and understanding the implementation of the same in various engineering applications. Prof. E. Pradeep Kumar and Dr. V. Srinivas Viswanath were present there for helping the participants.

After lunch, on 21st September 2019, a valedictory function was arranged in the presence of Dr. CHVS ParameswaraRao(Principal, Narayana Engineering College, Gudur), Prof. B.V. Krishnaiah (Head of Mechanical Engineering Department) and Dr. V. SrinivasViswanath (Associate Professor-Mechanical Engineering). In the valedictory function, participants shared their feedback for the last six days of STTP. Then mementos were distributed to trainers as a token of gratitude by Dr. CHVS Parameswara Rao and Prof. B.V. Krishnaiah to the participants. After this coordinator of the STTP. Dr. V. Srinivas Viswanath expressed the vote of thanks and the last program ended with the national anthem.