

# Scouts, BSA STEM (Science, Technology, Engineering and Mathematics ) Program

**March 9, 2022**

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**Troop 128 Committee Chairman**

# Why emphasize STEM in Scouting ?

- **Technology touches nearly every facet of daily life**
  - Education, Employment, Entertainment
  - Homes, Businesses, Computers, Phones, Cars
  - Innovation, Rapid product life-cycles
- **Industry demand for STEM-trained personnel continuing to grow**
  - Businesses have a difficult time filling STEM-related positions
  - Businesses “pulling” interested youth into STEM educational programs, to meet need
  - Provide a GREAT opportunity for GOOD jobs
- **Scouting program already includes Merit Badges for many STEM-related topics**
  - Electronics, Programming, Engineering ...
- **Nova and Supernova programs created to encourage Scout’s to learn about STEM, STEM-education and STEM-related careers**

# **Pacifica STEM (related) program opportunities**

- **BSA offers Nova and Supernova awards, supplementing rank and merit badge advancement, encouraging STEM**
  - ~½ of Merit badges qualify
- **Organizations in Pacifica District offer a wide range of STEM related activities for Scouts**
  - Many schools/groups sponsor FIRST Robotics teams
  - Middle- and High-school STEM clubs
  - “Take your child to work day”
  - Cabrillo offers many STEM merit badges – See Tentaroo / Black pug
  - Operation On-Target
  - International Printing Museum Merit Badge Day – 4/23/2022
  - Northrop Grumman STEM Merit Badge Day – 5/7/2022
  - Geocaching Day – 6/04/2022
- **I am assembling a master list of STEM activities and will share monthly at Roundtable**

# Nova awards

- **Each award focuses on a specific group of topics**
- **Each award requires**
  - Completion of 3 hrs of individual reading, research or watching, developing questions for discussion
  - Completion of a unique Merit Badge
  - Completion of one or more sets of activities or visiting topic specific site
  - Discussing what you learned and how it affects daily life with your mentor
- **Will discuss specifics of each award shortly**
- **Visit <https://www.scouting.org/stem-nova-awards/> for more information**

## Scouts BSA



Science:

**Shoot!**

**Let It Grow!**

**Splash!**

**Mendel's Minions**



Technology:

**Start Your Engines!**

**Hello World**



Engineering:

**Whoosh!**

**Up and Away**

**Next Big Thing**



Math:

**Designed to Crunch**

# Nova Award Recognition

- Patch awarded for 1st Nova award in each program
- Pi device awarded for each subsequent Nova award



Cub Scout Nova Patch – SKU 613042



Scouts BSA Nova Patch – SKU 618757



Venturing / Sea Scout Nova Patch – SKU 618670



# Nova Award Requirements

Science				Technology		Engineering			Math
Shoot!	Let it Grow!	Splash!	Mendel's Minions	Start Your Engines!	Hello World	Whoosh!	Up and Away	Next Big Thing	Designed to Crunch
Projectiles, aviation, weather, Astronomy, Space Exp.	Agriculture, Farming of Crops and Animals	Hydrologic cycle, Souces and users of Water	Genetics, Genomics	Transportation and transportation technology	Computers, Coding and Careers	Motion, Motion related Technology	Fluid dynamics	New Product Development & Design	Models, Physics, Sports Equip, Bridge building, Cryptography
<b>Watch or Read or Research above topics for 3 hrs. Discuss 2 questions with Counselor</b>									
<b>Complete 1 unique Merit Badge from list</b>									
Do 1 of 2:	Do 2 of 3:	Do 2 of 4:	Do 2 of 4:	Do	Do	Do	Do 2 of 4:	Do 4 of 6:	Do 2 of 4:
Projectile Sim	Investigate Food Sources	Models of liquid Water and Ice	Teach Inheritance	MB Energy Source	Discuss programming concepts	List or Draw 6 machines	Investigate Terminal Velocity	Innovation	Calculate Horsepower
		Surface Tension demos	Extract DNA			Name, how works	Calc Terminal Velocity on other planets	Prototyping	Attend 2 Track, Swim meets, time and calc stats
Escape, Orbital and Terminal Velocity	Define and learn about types of Farming	Determine State Water Use	Grow 3 Gen's of Peas	Possible Energy Sources		Machines, Energy Source for MB	Deliver rescue supplies to community after disaster	Market Reasearch	Attend Soccer, Baseball, Basketball game, Calc Stats
		Do Agriscience experiment	Investigate Home Water Use	Create 3D DNA model		Discuss Alt. Energy Srcs	What learned	Test Airfoils	Painstorming
							Inventors		

# Nova Award Requirements (cont.)

Science				Technology		Engineering			Math
Shoot!	Let it Grow!	Splash!	Mendel's Minions	Start Your Engines!	Hello World	Whoosh!	Up and Away	Next Big Thing	Designed to Crunch
Do 1 of 2:	Do	Do	Do	Do	Do	Visit 1 of 2:	Visit 1 of 3:	Do	Do
Visit Museum	Visit Farm	Visit Water Processing site	Write Report on 1 of 9 topics	Dsn & Build model vehicle	Write Is string a palindrome ? Program	Amusement park, Id Simple Machines & Forces	Indoor skydiving with STEM program	Painstrom or Brainstorm a new product, with 3D model	Investigate Calculator, explore functions
Observe Satellite					Write & explain 1 of 5 sample programs	Playground, Id Simple Machines and Forces	Flight, Aviation, Space Museum		
Design and Build 1 of 3:					Write & explain 1 of 7 sample programs	Design and discuss park ride or playground fixture or transportation		Visit company developing new products	
Catapult									
Pitching Machine									
Marble Rollercoaster									
					Visit business developing code				
Discuss what you learned with your Counselor									





# Supernova Awards

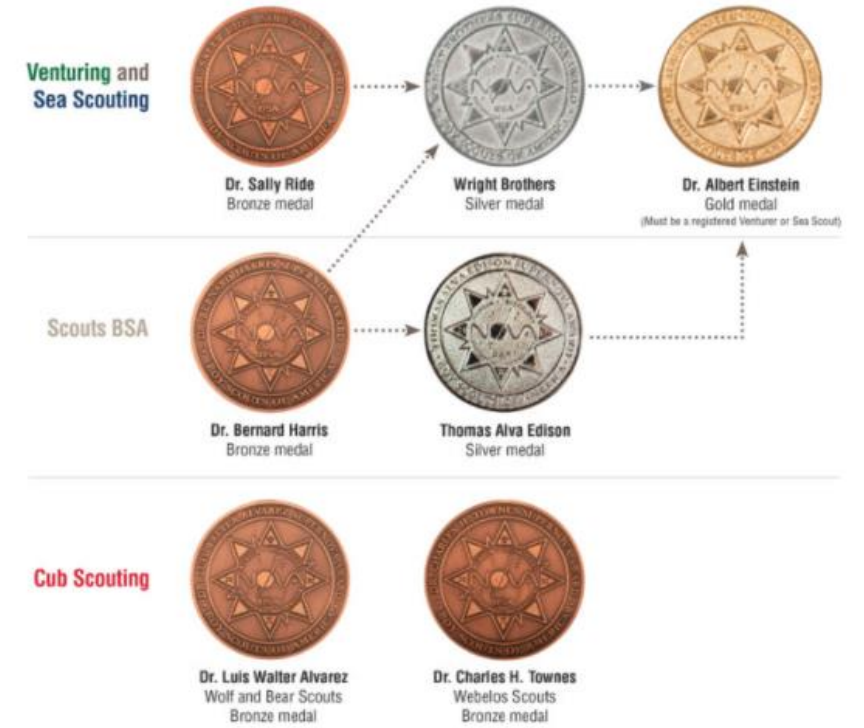
- **Dr Bernard Harris**

- Earn 3 Nova awards
- Earn Scholarship + 4 Supernova Merit Badges
- Complete 2 Supernova Activity Topics
- Participate in Math or Science competition
- Shadow local Scientist or Engineer OR Investigate a present info about a STEM career
- Use Scientific method to assess two competing theories present the theories and your conclusions
- Submit application

- **Thomas Edison**

- Earn Dr Bernard Harris award
- Earn 1 more Nova award
- Earn 4 more Supernova Merit Badges
- Complete 2 more Supernova Activity Topics
- Participate in Math or Science competition
- Present summary of STEM research topic
- Submit application

## Supernova Award Path



# becoming a Nova or SuperNova Mentor (Counselor)

- **Process is like becoming a Merit Badge counselor**
- **Nova:**
  - Adult application, with position code of 58 – Nova mentor
  - MB Counselor form 34405, indicating which Nova modules you are requesting
  - Current YPT certificate + AB506 completion certificate
  - Certificate of completion for STEM training modules
- **SuperNova:**
  - Adult application, with position code of 52 – Supernova Mentor
  - Completed Supernova Mentor information form
  - Current YPT certificate + AB506 completion certificate
  - Certificate of completion for STEM training modules
- **For Pacifica District: Upload to Google shared drive**