

# 2021 NYSF

## YEAR 12 PROGRAM

### 5 JAN – 22 JAN

<b>N</b> Nitrogen 14.007	<sup>39</sup> <b>Y</b> Yttrium 88.906	<sup>16</sup> <b>S</b> Sulfur 32.066	<sup>9</sup> <b>F</b> Flourine 18.998
<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>

Week One (Jan 5 – Jan 8) \_\_\_\_\_ page 2 - 3

Week Two (Jan 11 – Jan 15) \_\_\_\_\_ page 4 - 6

Week Three (Jan 18 – Jan 22) \_\_\_\_\_ page 7 - 9

# 2021 NYSF YEAR 12 PROGRAM 5 JAN – 22 JAN

## Tuesday Jan 5

<b>11am - 12pm</b>	<p><b>Opening</b> Students are welcomed to the 2021 NYSF Year 12 Program and participate in an interactive panel discussion on the role of future STEM professionals in helping build our national resilience.</p> <p><b>Dr Melanie Bagg</b> NYSF CEO</p> <p><b>Prof Tanya Monro (NYSF 1990 Alumna)</b> Australia's Chief Defence Scientist</p> <p><b>Prof Kieran Kirk</b> Dean of Science Australian National University,</p> <p><b>Rod Drury</b> Vice President, Lockheed Martin International</p> <p><b>Prof Veena Sahajwalla</b> University of New South Wales, ARC Laureate</p> <p><b>Prof Aidan Byrne</b> Provost, The University of Queensland</p> <p><b>Sophie Burgess</b> NYSF Student Staff Member</p>
	<p>12pm – 2pm <b>Break</b></p>
<b>2pm – 3:30pm</b>	<p><b>Nobel Laureate Lecture</b> Presentation Title: <i>My Nobel Prize Winning Research and Career Journey followed by a Q&amp;A session.</i></p> <p><b>Prof Barry Marshall AC</b> Australian Gastroenterologist and 2005 Nobel Prize Laureate</p>
	<p>3:30pm – 4pm <b>Break</b></p>
<p>4pm – 5pm <b>Interest Group Meet up</b> Get to know the other members of your interest group and your student staff leaders. Debrief on the program so far and what's ahead!</p>	

## Wednesday Jan 6

<b>11am - 1pm</b>	<p><b>Critical Thinking</b> An NYSF program staple inviting students to think critically about the content presented to them during the NYSF Year 12 Program and in their future career.</p> <p><b>Dr Melanie Bagg</b> NYSF CEO</p> <p><b>Peter Ellerton</b> Critical Thinking Project, The University of Queensland</p>
	<p>1pm – 1:30pm <b>Break</b></p>
<b>1:30pm – 3:30pm</b>	<p><b>Science at Home</b> Taking at home science experiments to the next level; students will be invited to investigate how everyday items can be used in tertiary level science across two hands-on sessions.</p> <p><b>Questacon</b> Communicating Random Science</p> <p><b>Bianca Warnock</b> Co-founder, Sciren</p> <ol style="list-style-type: none"> <li>1. Biochemistry and DNA</li> <li>2. Starch Saves the World</li> </ol>
	<p>3:30pm – 6pm <b>Break</b></p>
<p><b>4pm – 5pm</b> <b>CERN Live Cross</b> CERN is the home of the Large Hadron Collider. As the European Organisation for Nuclear Research, CERN is one of the world's largest and most respected research centres. Join the live cross for a virtual tour of CERN, a research seminar and Q&amp;A session.</p>	

11 am - 12:30pm	<p><b>Specialist Lectures</b>  <i>With 20 STEM specialists on offer across the program, students will hear from a range of STEM superstars on their career and passion in STEM.</i></p> <p><b>Dr Jessica Hamilton</b>  <i>Carbon Capture in Mining Waste</i>  ANSTO</p> <p><b>Prof Alison Beavis (NYSF 1997 alumna)</b>  <i>Forensic Chemistry</i>  University of New South Wales</p> <p><b>Prof Janette Lindesay</b>  <i>Weather and Climatology</i>  Australian National University</p> <p><b>Dr Leisl Folks (NYSF 1984 alumna)</b>  <i>The State of Science</i>  Provost, The University of Arizona</p>
	<p>12:30pm – 1pm  <b>Break</b></p>
1pm – 2:30pm	<p><b>Specialist Lectures</b>  <i>With 20 STEM specialists on offer across the program, students will hear from a range of STEM superstars on their career and passion in STEM.</i></p> <p><b>Prof Jamie Seymour</b>  <i>Venomous Species</i>  James Cook University</p> <p><b>Keirin Joyce</b>  <i>Defence Drones</i>  Australian Defence Force</p> <p><b>Prof Ian Frazer AC</b>  <i>Immunology and Vaccines</i>  The University of Queensland</p> <p><b>Justin Clarke</b>  <i>Hypersonic and Aerospace engineering</i>  The University of Queensland</p>
	<p>2:30pm – 6pm  <b>Break</b></p>
<p>6pm – 8pm  <b>Trivia Night with the NYSF Student Staff Team</b>  <i>Does your interest group have all the answers? The NYSF Trivia night will be a fun, fast-paced night of questions across all STEM fields, challenging even the most experienced of quiz masters!</i></p>	

<p>11:30am – 12:30pm  <b>Interest Group Meet up</b>  <i>Get to know the other members of your interest group and your Student Staff Leaders. Debrief on the program so far and what's ahead!</i></p>	
<p>12:30pm – 1pm  <b>Break</b></p>	
1pm – 3pm	<p><b>STEM Communication Workshop: Media</b>  <i>During this interactive workshop, some of Australia's best communications experts will explore the different types of science communication used today, the various platforms, and how to shape STEM messaging to make it interesting and accessible for us all.</i></p>
	<p><b>Dr Jonathan Webb</b>  Head, ABC Science Unit</p> <p><b>Christina Hickie</b>  Senior Communications Manager, CSL</p> <p><b>Dr Emma Beckett</b>  Molecular Nutritionist, University of Newcastle</p> <p><b>Dr Tara Roberson</b>  ARC Postdoctoral Researcher, EQUUS</p> <p><b>Adam Boland</b>  Managing Director, Bohdee Media</p>

## END OF WEEK ONE

END OF WEEK ONE



# 2021 NYSF YEAR 12 PROGRAM 5 JAN – 22 JAN

Monday Jan 11

Tuesday Jan 12

<b>11am - 1pm</b>	<p><b>Careers Day – Session One</b>  <i>Learn all you need to know about STEM study and career opportunities with NYSF Partners at the two Careers Days!</i></p> <p><i>During the Careers Days participants will hear about study and career pathways, ground-breaking research and career opportunities from a range of NYSF partners and get to ask them questions.</i></p> <p><b>NYSF Partner Presentations</b></p> <ul style="list-style-type: none"> <li>- Lockheed Martin</li> <li>- Australian National University</li> <li>- CSL</li> </ul> <p><b>Breakout Room Discussions</b></p>
1– 2pm <b>Break</b>	
<b>2pm – 4pm</b>	<p><b>Careers Day – Session Two</b>  <i>Learn all you need to know about STEM study and career opportunities with NYSF Partners at the two Careers Days!</i></p> <p><i>During the Careers Days participants will hear about study and career pathways, ground-breaking research and career opportunities from a range of NYSF partners and get to ask them questions.</i></p> <p><b>NYSF Partner Presentations</b></p> <ul style="list-style-type: none"> <li>- CSIRO</li> <li>- The University of Queensland</li> <li>- Bayer</li> </ul> <p><b>Breakout Room Discussions</b></p>
4pm – 5pm <b>Break</b>	
<p>5pm – 6pm  <b>Interest Group Meet up</b>  <i>Get to know the other members of your interest group and your Student Staff Leaders. Debrief on the program so far and what’s ahead!</i></p>	

<b>11am - 1pm</b>	<p><b>Careers Day – Session Three</b>  <i>Learn all you need to know about STEM study and career opportunities with NYSF Partners at the two Careers Days!</i></p> <p><i>During the Careers Days participants will hear about study and career pathways, ground-breaking research and career opportunities from a range of NYSF partners and get to ask them questions.</i></p> <p><b>NYSF Partner Presentations</b></p> <ul style="list-style-type: none"> <li>- The University of Melbourne</li> <li>- Defence Science &amp; Technology</li> <li>- Griffith University</li> </ul> <p><b>Breakout Room Discussions</b></p>
1– 2pm <b>Break</b>	
<b>2pm – 4pm</b>	<p><b>Careers Day – Session Four</b>  <i>Learn all you need to know about STEM study and career opportunities with NYSF Partners at the two Careers Days!</i></p> <p><i>During the Careers Days participants will hear about study and career pathways, ground-breaking research and career opportunities from a range of NYSF partners and get to ask them questions.</i></p> <p><b>NYSF Partner Presentations</b></p> <ul style="list-style-type: none"> <li>- ResMed</li> <li>- Defence Force Recruiting</li> <li>- University of New South Wales</li> </ul> <p><b>Breakout Room Discussions</b></p>
4pm – 6pm <b>Break</b>	
<p>6pm – 8pm  <b>Online Games Tournament with the NYSF Student Staff Team</b>  <i>Join your fellow NYSFers for a range of online games and puzzles to determine who is the NYSF 2021 gaming champion.</i></p>	



## 2021 NYSF YEAR 12 PROGRAM 5 JAN – 22 JAN

Wednesday Jan 13

Thursday Jan 14

## 2021 NYSF YEAR 12 PROGRAM 5 JAN – 22 JAN

<b>11am -12pm</b>	<p>organisations all around Australia to curate a range of STEM visits specifically for the 2021 NYSF Year 12 Program.</p> <p><b>Digital STEM Visit Program</b>  <b>Heron Island Research Station</b>            Coral Reef Research and Teaching  <b>National Computational Infrastructure</b>            Virtual Tour and Q&amp;A</p>
12pm – 12:30pm <b>Break</b>	
<b>12:30pm – 1:30pm</b>	<p><b>Digital STEM Visit Program</b>  <b>Taronga Zoo</b>            The Science of Zoos  <b>ANSTO</b>            Nuclear Physics in Action</p>
1:30pm – 2pm <b>Break</b>	
<b>2pm – 3pm</b>	<p><b>Digital STEM Visit Program</b>  <b>Prof Carola Garcia De Vinuesa</b>            Personalised Medicine, ANU  <b>Australian Antarctic Division</b>            Live Cross to Casey Station</p>
3pm- 3:30pm <b>Break</b>	
<b>3:30pm – 4:30pm</b>	<p><b>Digital STEM Visit Program</b>  <b>Coral Watch</b>            Saving the Reef through i            Citizen Science  <b>Activity to be Confirmed</b></p>
4:30pm - 6pm <b>Break</b>	
<p><b>6pm – 7pm</b>  <b>Dr Karl's House Party</b>  <i>In an exclusive opportunity just for the NYSF students, Dr Karl will host an NYSF House Party where you'll get to ask the STEM questions you've always wanted to know the answer to!</i></p>	

<b>11am -12pm</b>	<p>organisations all around Australia to curate a range of STEM visits specifically for the 2021 NYSF Year 12 Program.</p> <p><b>Digital STEM Visit Program</b>  <b>CSIRO Canberra</b>            Virtual Lab Tour and Q&amp;A  <b>Dr Brad Tucker</b>            Astrophysics, virtual tour of Mount Stromlo &amp; Siding Spring Observatories  <b>University of Melbourne</b>            Human Anatomy Hacks and the Challenging Science Beyond Surgery</p>
12pm – 12:30pm <b>Break</b>	
<b>12:30pm – 1:30pm</b>	<p><b>Digital STEM Visit Program</b>  <b>CSIRO Canberra (Continued)</b>            Virtual Lab Tour and Q&amp;A  <b>Gilmour Space &amp; Sabre Astrophysics</b>            Talk with space start-ups on working in the Australian space industry</p>
1:30pm – 2pm <b>Break</b>	
<b>2pm – 3pm</b>	<p><b>Digital STEM Visit Program</b>  <b>A/Prof Keith Chappell</b>            Australian COVID Vaccine Development  <b>Questacon</b>            Coldest Place on Earth</p>
3pm- 3pm <b>Break</b>	
<b>3pm – 4:30pm</b>	<p><b>Digital STEM Visit Program</b>  <b>Questacon (3pm – 4pm)</b>            Space and Planet Earth  <b>SA Health &amp; Medical Research Institute (3:30pm – 4:30pm)</b>            Cancer research virtual lab tour  <b>The University of Melbourne (3:30pm – 4:30pm)</b>            Faculty of Veterinary and Agricultural Science</p>

**Friday Jan 15**

<b>11am - 1:30pm</b>	<p><b>STEM Visits</b>  <i>The NYSF is working closely with organisations all around Australia to curate a range of STEM visits specifically for the 2021 NYSF Year 12 Program.</i></p> <p><b>Digital STEM Visit Program</b>  <b>CSIRO (11am – 12:30pm)</b>  Ecology Lab  <b>Prof Kate Smith-Miles (11am – 12pm)</b>  Mathematics in Art  <b>The University of Melbourne (11am – 12pm)</b>  Disease Outbreak in Victorian London  <b>Prof Vanessa Hayes (12:30pm – 1:30pm)</b>  The Homeland of Modern Humans</p>
1:30pm – 2pm <b>Break</b>	
<b>2pm – 4:30pm</b>	<p><b>Digital STEM Visit Program</b>  <b>Dr Gruion Ang (2pm – 3:30pm)</b>  Experience Genetics Workshop  <b>ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) (2pm – 3pm)</b>  Gravitational Waves Workshop  <b>The University of Melbourne (3:30pm – 4:30pm)</b>  Nest and Egg design  <b>Australian National University College of Engineering and Computer Science (3:30pm – 4:30pm)</b>  LENS Workshop</p>
4:30pm - 6pm <b>Break</b>	
<b>6pm – 7pm</b> <b>Interest Group Meet up</b> <i>Get to know the other members of your interest group and your Student Staff Leaders. Debrief on the program so far and what's ahead!</i>	

## END OF WEEK TWO



# 2021 NYSF YEAR 12 PROGRAM 5 JAN – 22 JAN

Monday Jan 18

Tuesday Jan 19

<b>11 am - 12pm</b>	<p><b>Nobel Laureate Lecture</b>  <i>Presentation Title: How did a kid from the Mountains of Montana discover 70% of the Universe and Win a Nobel Prize?</i></p> <p><b>Prof Brian Schmidt AC FAA FRS</b>          ANU Vice Chancellor and President          2011 Nobel Prize Laureate (Physics)</p>
12:30pm – 1pm <b>Break</b>	
<b>1pm – 3pm</b>	<p><b>Rotary Presentations</b>  <i>Rotary is the Founding Partner of the NYSF, and every year Rotarians continue to support the NYSF Year 12 Program by promoting the opportunity in local communities, managing applications and selections of students and assisting with funding or fund-raising for student fees to attend.</i></p> <p>The Rotary presentation will include:</p> <ul style="list-style-type: none"> <li>- History of Rotary and the NYSF</li> <li>- Rotaract Australia</li> <li>- How Rotary is eliminating Polio</li> </ul>
3pm – 4pm <b>Break</b>	
<p>4pm – 5:30pm  <b>Speed Networking</b>  <i>Speed Networking is a fast-paced, and much-loved part of the NYSF Program. Students meet a range of STEM professionals who have 10 minutes to tell them about their study and career path and what their day job involves, before they get whisked off to the next group of students!</i></p>	


<b>11 am - 12:30pm</b>	<p><b>Specialist Lectures</b>  <i>With 20 STEM specialists on offer across the program, students will hear from a range of STEM superstars on their career and passion in STEM.</i></p> <p><b>A/Prof Gordan Cable AM</b>  <i>Space Medicine</i>          University of Tasmania</p> <p><b>Dr Elanor Bell</b>  <i>Antarctic Whales</i>          Australian Antarctic Division</p> <p><b>Dr Justin Marshall</b>  <i>Visual Neuroscience in Mantis shrimp</i>          The University of Queensland</p> <p><b>A/Prof Kate Fox</b>  <i>Biomedical Engineering</i>          RMIT</p>
12:30pm – 1pm <b>Break</b>	
<b>1pm – 2:30pm</b>	<p><b>Specialist Lectures</b>  <i>With 20 STEM specialists on offer across the program, students will hear from a range of STEM superstars on their career and passion in STEM.</i></p> <p><b>Dr Adele Morrison</b>  <i>Oceanography and Climate Change</i>          Australian National University</p> <p><b>Dr Stas Shabala</b>  <i>Extragalactic Astrophysics</i>          University of Tasmania</p> <p><b>Dr Jordan Bailey</b>  <i>Plant pathology and Biosecurity</i>          NSW Department of Primary Industries</p> <p><b>Dr Carl Blair</b>  <i>Gravitational Waves</i>          The University of Western Australia</p>
2:30pm – 6pm <b>Break</b>	
<p>6pm – 8pm  <b>Online Formal Dinner</b>  <i>Bring along your favourite meal to celebrate the past two weeks and the final days of the NYSF 2021 Program.</i></p>	



## 2021 NYSF YEAR 12 PROGRAM 5 JAN – 22 JAN

Wednesday Jan 20

Thursday Jan 21

11:30am – 12:30pm <b>Interest Group Meet up</b> <i>Get to know the other members of your interest group and your student staff leaders. Debrief on the program so far and what's ahead!</i>		
12:30pm – 1pm <b>Break</b>		
1pm – 3pm	<b>STEM Communication Workshop: Communication STEM for Change</b> <i>STEM is full of facts and data, but how can we get people to engage, to act, and to consider change based on scientific evidence? How can we develop policies and the right frameworks to regulate use of new technologies in a rapidly changing world? How do we make sure the right science and technology is prioritised and funded? In this workshop, a highly accomplished panel will discuss how science communication can inform and influence the important decisions facing us all.</i>	
	<b>Virginia Haussegger AM</b> Australian Journalist, Chief Editor BroadAgenda <b>Anna-Maria Arabia</b> Chief Executive, Australia Academy of Science <b>Dr Chris Hatherly (NYSF 1996 alumnus)</b> CEO, Australia Academy of Science <b>Catherine Luckin</b> CEO, Australian Academy of Health and Medical Sciences <b>Matt Nurse</b> Australian National University PhD candidate; The science of miscommunication	
3pm – 6pm <b>Break</b>		
6pm – 7pm	<b>An Evening with Prof Lisa Harvey-Smith</b> <i>Join celebrated astrophysicist and Women in STEM Ambassador Prof Lisa Harvey-Smith for an evening of astrophysics, star gazing and the journey through her research career.</i>	
		
11:30am – 12:30pm	<b>Pathways Day</b> <i>How do you transition from completing your study to entering the STEM workforce? Hear from some young STEM graduates on their early career journey and what advice they would give to Year 12 students entering tertiary study pathways.</i>	
	<b>Keely Perry</b> (Biotechnology, UQ) <b>James Hardwood</b> (Engineering) <b>Stephanie McLennan</b> <b>NYSF 2006 alumna</b> (Geoscience) <b>Atiyeh Vaezipour</b> (Software Engineering, UQ) <b>Sadegh Imani</b> (Nano Engineering and Computational Mechanics, Griffith) <b>Winter Okoth</b> (Vaccines, Griffith) <b>Farya Henderson</b> (Biomedical Engineering, Griffith) <b>Emma Henderson</b> (Urban Riparian Vegetation, Griffith) <b>Jasmin Gross</b> (Whale Health, Griffith) <b>Hollier O'Neill</b> (Genetics, UQ) <b>Will Landsberg</b> (Aerospace Engineering, UQ)	
	12:30pm – 1pm <b>Break</b>	
	1:30pm – 2:30pm	<b>Pathways Day; Dr Karl's Journey</b> <i>Dr Karl will share his journey through his studies, medicine and his career in science media.</i>
	5pm – 6pm <b>Break</b>	
6pm – 7pm <b>Interest Group Meet up</b> <i>Get to know the other members of your interest group and your Student Staff Leaders. Debrief on the program so far and what's ahead!</i>		

## 2021 NYSF YEAR 12 PROGRAM 5 JAN – 22 JAN

Friday Jan 22



<b>11am – 3pm</b>	<p><b>Student Staff Presentation</b></p> <p><b>Think Big and Goal Setting</b>  <i>Grab some advice on how to best navigate the next big decisions in your life after Year 12; what could you achieve and how you could do it!</i></p> <p><b>Year 12 and Beyond</b>  <i>Year 12 is just the start of your journey, not the destination. Reframe your mindset with some helpful advice from Staffies who have all been through Year 12 and survived!</i></p> <p><b>Presenting Your Best Self</b>  <i>Learn some tips on presenting your best self in job interviews and professional interactions including recognising your body language and interacting with others in a professional setting.</i></p>
<p>3pm – 3:30pm  <b>Break</b></p>	
<b>3:30pm – 5:30pm</b>	<p><b>Close of the Program</b>  <i>The Closing Event marks the end of the session for 2021 and celebrates the program while informing students of the opportunities to come.</i></p> <p><b>Meet the Chiefs</b>  <i>A panel featuring Chief/Lead Scientists from around Australia. Students will learn about the STEM priorities and opportunities in different parts of our nation and inspire them as they go forward into Year 12.</i></p> <p><b>Dr Melanie Bagg</b>  CEO NYSF</p> <p><b>Dr Cathy Foley AO PSM FAA FTSE</b>  Chief Scientist of Australia</p> <p><b>Dr Amanda Caples BSc Hons PhD GAICD</b>  Victoria's Lead Scientist</p> <p><b>Prof Hugh Durrant-Whyte FRS FAA</b>  NSW Chief Scientist &amp; Engineer</p> <p><b>Prof Caroline McMillen AO FAHMS</b>  Chief Scientist for SA</p> <p><b>Prof Hugh Possingham FAA</b>  Queensland Chief Scientist</p> <p><b>Lockheed Martin Student Challenge</b>  <i>Lockheed Martin will give a presentation about the future STEM workforce and set an exciting challenge for 2021 NYSF participants with a fantastic prize on offer!</i></p> <p><b>Scott Thompson</b>  Deputy Country Executive, Lockheed Martin Australia Pty Ltd</p> <p><b>What Comes Next?</b>  <i>Wrapping up the 2021 NYSF Year 12 Program, hear about what opportunities are open to you as the most recent cohort of NYSF Alumni.</i></p>

**END OF PROGRAM**