Fireball Planetarium

Planetarium Program Guide

Fireball Planetarium
38 Pearson St. Suite #117
St. John's, NL, A1A3R1
(709) 727- 4447
www.fireballplanetarium.ca

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Introduction

Why not make science class fun as well as educational! The Fireball Planetarium presents a unique way of learning about the sky. It is a field trip that doesn't involve the cost of a bus or the worry of taking children on the road. No permission slips or extra teacher aids, a Planetarium Specialist will come to you which enables more students to take advantage of the learning opportunity and avoids having to miss other classes.

Thank you for scheduling a trip to your school with our portable planetarium. The Fireball Planetarium can hold up to 25 students and is wheelchair accessible. Using digital Newtonian two mirror projection system, the planetarium can create virtually any environment. You can be seated in the interior of a spacecraft, witness the birth of a star, stargaze at night over Newfoundland and Labrador, or travel in among the stars of the Milky Way Galaxy.

Welcome to our new 2013-2014 Teacher's Guide! Our programs cover all grade levels from pre-school to college. In each, we are committed to providing a high quality educational experience for you and your class. We look forward to serving you.

What is a Planetarium?

A planetarium is a theatre of the Universe. It can surround you with an accurate image of the sparkling night sky. It can show all the motions and cycles of the sky. It can create a multi-media experience with slides, video, visual effects, computer animations, narration, and music that reveal the wonders of the cosmos to you and your class. It can interpret the Universe in a way that appeals to both the mind and eye. The Planetarium will introduce your students to a lifelong acquaintance with the sky and the Universe.

Who Should Use the Planetarium?

Classes studying astronomy should visit the Planetarium. Ideally, a student should make several visits over the years to experience a broad range of programs. We also encourage students and parents to attend our public shows in the evening. Many of our programs are interdisciplinary in nature and can enrich classes not only in the other sciences (*e.g.*, earth science and biology, but also in history, geography, and study of various cultures.

Using the Planetarium Effectively

We see the planetarium as a resource to help teach astronomy and as a means to convey the excitement of astronomy and the sciences and to attract student interest in these topics. We want the visit of your class to be a stimulating and educational experience. When you call to arrange a visit, please let us know any questions you have. This will help us insure the best possible program for your class.

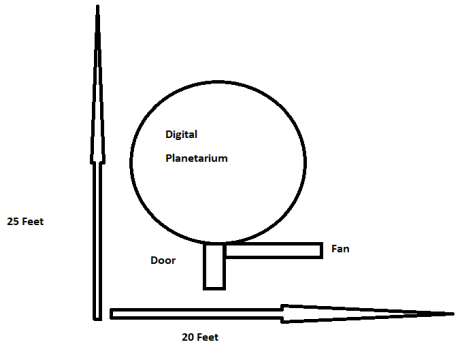
Some helpful pointers include:

* A planetarium visit is most valuable when it is integrated with the regular classroom syllabus. The visit should generally be made after students have studied the related material in class, especially for the younger grades.
* To build on the interest of the visit we suggest some related preparation and then some follow up activities.
* The planetarium visit can be used to extend the classroom unit. Don't necessarily choose the program that most completely overlaps your curriculum. Consider also a program that expands on just part of your unit or that extends the unit in a new direction.

How to Arrange a Visit

Arranging a visit to the planetarium is simple. Call the Director, Garry Dymond, at (709)727 4447 to select a specific program and secure a date and time for the visit. You can also make contact by email at gdymond@fireballlplanetarium.ca or check the planetarium's web site at www.planetarium.ca . We are usually booked to capacity late in the semester, especially spring, so it is wise to reserve well in advance and, if possible, to select times earlier in the semester. Our price is $5 (hst included) per person for all programs. We can do up to 5 classes a day.

Planetarium Dimensions
Height = 11 feet
Width = 20 Feet
Length = 25 Feet



Digital Planetarium Requirements and Procedures

I. Scheduling

Each building representative will provide the Planetarium Specialist with a completed daily schedule for each class' visit(s) to the Planetarium. This schedule should include lunch times for the Planetarium Specialist and the times of any special presentations requested. These schedules need to be sent to the Fireball Planetarium Specialist two weeks prior to the day the Planetarium will arrive at your school.

In order to best meet the educational needs of each class, the building representative or individual teachers should forward to the Fireball Planetarium Specialist their topic selections or special instructional requests at least one week prior to the scheduled Planetarium visit.

A building representative should be on hand 45 minutes before the first scheduled presentation of the day to allow the Planetarium Specialist ample set-up time.

II. Locating the Planetarium

The Planetarium should be located in an area measuring at least 20' x 25' with a ceiling clearance of 10.5'. At least one grounded 110 volt outlet is required. The floor area must be cleared of all objects (i.e. desks, chairs, music stands, stage scenery, etc) and be swept clean of dirt and dust to avoid damaging the equipment.

III. Capacity

The Planetarium can comfortably accommodate up to 30 elementary or 25 junior-senior high students with their teacher. We like to see an average of 25 students.

IV. Power Failure/Emergency Evacuation/Fire Drill

The fan must remain on in order to maintain dome inflation. If a power failure were to occur or if an emergency evacuation were needed, the Planetarium Specialist is trained to be able to "flip" the dome over and off of the occupants within a matter of a few seconds, allowing the classroom teacher to lead students to their designated emergency area or exit.

ATTENTION BUILDING ADMINISTRATORS: It would be appreciated if any planned fire drills were not scheduled during the times the Planetarium is scheduled to be in use. Rapid evacuation of the Planetarium should be avoided except for emergency situations as it takes approximately 20 minutes to reset projectors and re-inflate the dome. This could lead to a class missing its scheduled presentation.

V. Security

Digital Planetarium is a precise and fragile scientific instrument (approximate replacement cost is $35,000) and precautions should be taken to protect it. The presentation room should be locked when not in use. If this is not possible, please inform the Planetarium Specialist at the time of your visit. On multiple day visits, the Planetarium Specialist can disassemble the Planetarium for storage in a secure place or, if necessary, take it with them at the end of the day.

VI. Presentations

A. Pre-Visit:

The classroom teacher should inform students that they will be expected to:

1. Enter and exit the dome carefully. The dome has an airlock type of doorway that is designed so that participants can walk into the dome. This doorway is also designed to accommodate special needs students, including those in wheelchairs.
2. Leave all objects such as pens, pencils, and/or books outside the dome. (This is to insure the safety of the dome and fellow students. Due to the darkened environment, eyes cannot detect danger and will not respond effectively.)
3. Remain seated during the presentation.
4. Due to the acoustic nature of domed structures, loud talking or clapping should be avoided inside the dome.
5. Listen carefully to the Planetarium Specialist and do not ask questions when others are talking or during pre-recorded portions of the program.

B. Presentation

The classroom teacher will:

1. **Be inside the planetarium at all times** to assist the Planetarium Specialist by being actively involved in the presentation and dealing with discipline problems which may arise. In order to help in monitoring students, teachers will be given a special flashlight which can be used during the presentation. If the classroom teacher is unable to participate inside of the Planetarium, another staff member may be substituted.
2. Be prepared to evaluate the presentation.

C. Post-Visit

The classroom teacher will:

1. Lead the students out of the Planetarium and assist them in putting on their shoes and lining up away from the dome.

2. Discuss any questions that develop after the class returns to their room. (If any questions are unanswered after researching them, they can be forwarded to the Fireball Planetarium and we will answer them as soon as time permits.)
3. Submit a completed evaluation to their principal and/or to the Fireball Planetarium.

Curriculum Objectives

This outline is provided as a comprehensive overview of our Planetarium Program. As a result of their Planetarium visit(s) the following objectives will be met.

Primary Level students will be:

1. Comfortable upon entering or exiting the dome and participating in the presentation.
2. Aware of daily celestial events and diurnal motion.
3. Able to list the differences between day and night.
4. Able to locate both Dippers (Big and Little) and the North Star.
5. Stimulated to discuss stars, sun, moon, and planet topics.

Intermediate Level Students will be:

1. Aware of celestial motions, events and be able to explain their causes.
2. Able to locate both Dippers, the North Star, prominent seasonal and circumpolar constellations, and name the 1st magnitude (brightest) stars visible.
3. Motivated to discuss/investigate celestial objects, events and phenomena.
4. Describe the physical characteristics of components of the solar system - specifically, the sun, planets, moons, comets, asteroids, and meteors

Secondary Level Students will be:

1. Aware of celestial motions, events and be able to explain their causes.
2. Describe theories on the origin and evolution of the universe
3. Describe and classify the major components of the universe.
4. Able to describe and explain reasons for the seasonal variation of constellations.
5. Able to explain seasonal changes throughout the year as caused by variations of the sun's apparent path in the sky.
6. Describe theories on the formation of the Solar System

Public/Community Level Clients will be:

1. Able to locate prominent constellations and 1st magnitude stars.
2. Able to describe the daily motions of the sun, moon, stars and planets.
3. Aware of observable changes in the day/night sky due to the motions of Earth.

Program Selections

Live Programs

These programs are live presentations pitched to the grade level of your class. All involve student participation. The emphasis is on demonstrations that use the star projector or other equipment unique to the planetarium rather than on lessons that could also be done in the regular classroom.

Digital FullDome Shows

These taped programs combine narration, music, dozens or hundreds of slides and other visuals, and the planetarium star field in an instructive multimedia show. They are preceded by a live introduction and followed by a question-and-answer period. The roster of available programs includes all of our former public shows plus several others we maintain specifically for school classes. It has been our experience that most programs designed with adults in mind also work well for children as young as grades 3 or 4. A few programs designed just for children have an upper grade limit indicated.

This digital system allows our Planetarium Specialist to customize the program offerings to the needs of each individual teacher and class from pre-K to high school. We now have the ability to project a realistic daytime sky with azimuth and altitude grids for those requesting the program on Seasons. The grade levels listed below are suggestions based on past Planetarium use. All programs, except those for secondary students, can be differentiated to suit the abilities of individual classes.

Suggested shows for Curriculum Topic :

Grade 1: *Daily season changes and:* a) Zubenelgenubi's Magical Sky, b) Wilbear's Adventure {Also tells about flight; airplane} c) Max Goes to the Moon { Planetarium show from the Max series of books by Dr. Jeffrey Bennett }

Grade 6:*Space exploration and the solar system ,Earth's relationship with moon and Universe.Canada's contribution to space in the past, present, and future!* . a) Cosmic Tour b)We Choose Space c) Back To the Moon for Good d) Earth's Wild Ride

Grade 9: *Formation, evolution, Structure and nature of the solar system and the universe. The appearance and motion of visible celestial objects. Astronomical Units and light years. Space exploration and Canadian contributions to efforts in space based science experiments, astronomy, cosmology, and aerospace*. a) Cosmic Tour b)We Choose Space c) Back To the Moon for Good. d) Earth's Wild Ride

Fireball PLANETARIUM SHOWS

Fireball planetarium programs include comprehensive astronomy education for grades K-12 aligned with Newfoundland&Labrador Science Standards. Feel free to contact us with your questions and special requests as they relate to your science curricula needs.

Our planetarium shows consist of three parts: the current night sky, interactive and a fulldome film.

As the lights go down, we show you how to navigate the ***current night sky***. Learn how to identify constellations, asterisms, planets, and more!

Followed by the educational curriculum for the class level.

Next, sit back and enjoy a ***fulldome film*** *related to your class acyivities.!*

Zubenelgenubi's Magical Sky

Grades K-3

In this lively participatory program, cartoon characters talk to us as the daytime and nighttime skies are explored. The planetarium host is Zubenelgenubi (Zubee for short), and introduces visitors to the planetarium and the colorful characters enjoying the sky. During the show, the audience is introduced to Tracy the telephone pole, Hydro the hydrant, and a talking Sun and Moon. During the program a point-out of constellations is followed by a story and stormy sky. Students pitch in to help to blow the storm away and the program ends with a peaceful sunrise and new day.

We say it like this: ZU-ben-ell-guh-NU-bee

WILBEAR"S ADVENTURE

Grades PK-2

Follow a teddy bear's discovery of flight in this delightful adventure especially for ages 4-7. Wilbear's grandpa uses demonstrations exploring the nature of flight to build up to the story of the Wright Brother's historic first airplane experience. Grandpa bear captivates audiences with tales of inventions over time from kites and gliders to today's jet planes. Young Wilbear's dream comes true when he gets to fly in a real airplane just like his hero Wilbur Wright.

EARTH'S WILD RIDE

Grades 3 -9

In this 30-minute program a grandfather and his grandchildren watch a solar eclipse from the scenic cliffs overlooking their moon colony. Conversation leads to contrasts between the moon, the only home the grandchildren know, and the Earth where the grandfather has spent most of his life.

Through his stories the grandfather takes audiences on a dizzying wild canyon ride, to an ice age blizzard with a woolly mammoths, and back in time to where the dinosaurs lived. Each experience begins with a telescope view of the dynamic Earth in stark contrast with the unchanging lunar landscape. Grades 3-5: Grades 6-9

Sizing up Space

Grades 3-12

From the center of the Earth to the edge of the universe, this planetarium perspective demonstrates where we are. The Universe arranges itself into parts and clusters of parts that can be seen from Earth. A survey of these and the vast distances between them help us understand where we fit as a living planet orbiting one average star. The planetarium host also conducts a tour of the constellations in the sky this season.

Cosmic Tour

Grades 6-12

Cosmic Tour: *(Our most requested presentation from schools as it is curriculum driven.)* We leave the lights of St. John's to view the shining lights of our cosmic neighbors in this dark night sky. Our planetarium specialist adopts this tour to the grade you need. Covering concepts such as: - night and day, seasons, constellations, formation, evolution and structure of the Solar System and Universe and embracing Canadian contributions to space exploration.

Cosmic Colors: An Adventure Along the Spectrum

Grades 6-12

The nature of color affects all of our perception of the universe from telescope images to invisible light that cooks our popcorn. Explore the source and qualities of color in show that takes visitors from inside the eye to the farthest reaches of space.

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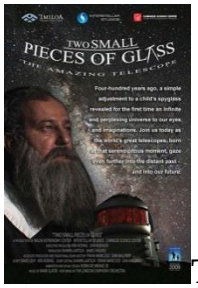


The Amazing Telescope: Two Small Pieces of Glass OD

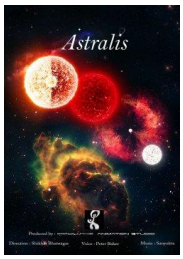
Grades 6-12

While attending a local star party, two teenagers learn how the telescope has helped us understand our place in space and how telescopes continue to expand our understanding of the Universe. Their conversation with a local female astronomer enlightens them on the history of the telescope and the discoveries these wonderful tools have made. The students see how telescopes work and how the largest observatories in the world use these instruments to explore the mysteries of the Universe.

Mars Show

Grades 3-12

The Mars invasion has begun. The little red planet has attracted the attention of humans for decades, and this program will follow the history and current events in our exploration of that little red neighbor. The planetarium host will add an introduction to the Newfoundland sky and its constellations. Mars Invasion traces the long tradition of human curiosity about Mars and our assault of technology from the Mariner missions in the 1970′s to the orbiters and rovers of today. Perhaps the next machines we send there will be human.



Astralis

Grades 6-12

The show is about the life cycle of Stars. From the birth of star in a stellar nursery to its journey towards a black hole or supernova, “Astralis” explains these phenomena in a very easy narrative. With the eye catchy visuals and lovely music, the show works for all age groups including school audience

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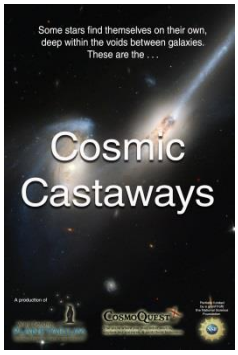
Back To the Moon for Good

Grades 6-12

Book it for your next meeting or your students. Show the relationships between Science and Technology by giving examples of improvements to tools and techniques of scientific investigation that will lead to a new and cheaper way to reach the moon by following groups from all over the world try to win the Google Xprize.



Cosmic Castaways

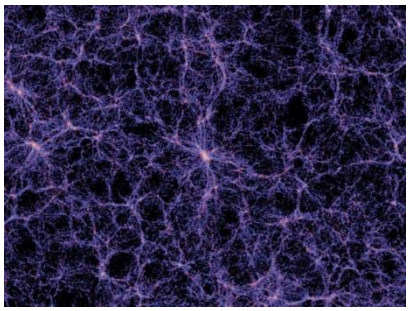
Grades 9-12

There are places where the night sky has no constellations. No Orion, no Big Dipper, nothing but a few lonely, far away stars and a few faint, ghostly patches of light. Most stars lie within the crowded boundaries of galaxies, travelling with their brothers and sisters in a vast galactic family. But some find themselves on their own, deep within voids between the galaxies. These are the cosmic castaways

WE CHOOSE SPACE

Grades 6-12

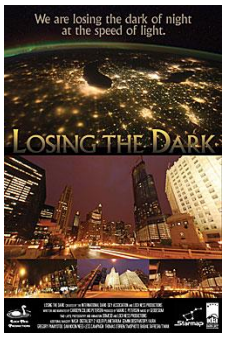
WE CHOOSE SPACE! is a planetarium show for audiences of all ages who dream of space and wonder about human spaceflight after Shuttle. It's a show filled with real adventures for the near frontier. Positive, possible, and exciting -- this is a promise we can make to our children, our future astronauts. Astronauts Scott Parazinsky, Tom Jones and Gene Cernan, and veteran space reporter Walter Cronkite are your tour guides on this adventure to the completed International Space Station and to the past and future moon. Include fulldome imagery using OUR fisheye lens on the ISS!



DARK

Grade 12

DARK is a fulldome movie that explains and explores the nature of Dark Matter, the missing 80% of the mass of the Universe.The search for Dark Matter is the most pressing astrophysical problem of our time – the solution to which will help us understand why the Universe is as it is, where it came from, and how it has evolved over billions of years – the unimaginable depths of deep time, of which a human life is but a flickering instant We journey through completely immersive visualisations of Dark Matter evolution calculated upon some of the world's fastest supercomputers – cosmological visions on a truly vast scale, in which galaxies themselves are but points of light, distributed across far larger intergalactic structures of Dark Matter. These visualisations, developed by Paul Bourke, demonstrate the cutting-edge of contemporary supercomputer visualisation of massive scientific datasets and astrophysical simulation.It sounds like Science Fiction, but it's not. It's the real stuff. Real Data, seen in this way for the very first time.



Losing the Dark

Grades 6-12

It introduces and illustrates some of the issues regarding light pollution, and suggests three simple actions people can take to help mitigate it. The show gives planetarium professionals a tool to help educate the public about the problems of light pollution. Planetarians are uniquely positioned to teach audiences ways we can all work together to implement responsible use of lighting. ***Losing the Dark*** is a "public service announcement" planetarium show, a collaboration of Loch Ness Productions and the International Dark-Sky Association.

Waiting Far Away

"An explorer of the cosmos has traveled too far… And can't find home."

In the creative process of producing planetarium shows, we often come across imagery that is stunning but doesn't work in the context of a science show. And so our collection of fulldome astronomy art animations has matured into a hybrid form of storytelling where we mix imagination with real data.

Fireball Planetarium

38 Pearson St. Suite #117
St. John's, NL
A1A 3R1
Phone: 709 727-4447
Email:gdymond@fireballplanetarium.ca
www.fireballplanetarium.ca

Instructions

Please complete the following form and send to:
Email: gdymond@fireballplanetarium.ca
Phone (709) 727 4447

Fireball Planetarium will contact you as soon as possible to confirm the details of your group visit. For more information about shows and pricing policies, please visit our website www. fireballplanetarium.ca

Contact and Group information

Teacher's name:_____

Contact Email:_____

Contact Phone:_____

School:_____

Address:_____

City:_____ Postal Code:_____ Telephone:_____

Grade level:_____ Number of students:_____ Number of Adults_____

Group visit Dates and Times

Please indicate your first, second and third choice dates, plus your preferred time for the group visit.

1._____

2._____

3._____

*Due to liability concerns it is **required** that another adult, preferably a teacher, be present **inside** the Planetarium dome with each class. Of course, this also enhances the educational experience of the students. **Please** remind your teachers of this policy.*

Fireballl Planetarium, 38 Pearson Street,Suite#117,St.John's, NL, A1A3R1
Garry Dymond, Planetarium Specialist, (709) 727 4447
gdymond@fireballlplanetarium.ca www.Fireballplanetarium.ca

Planetarium Program Evaluation

After the Fireball Planetarium has visited your class, please take a moment to fill out this evaluation. Your suggestions are very valuable to us!
Mail the completed evaluation to :.....Fireball Planetarium
38 Pearson Street, Suite#117
St. John's, NL
A1A3E1
Or Email to:.....gdymond@fireballplanetarium.ca
1. Show Name: _____
2 .Group grade/age level:_____
3. Was the material presented at an appropriate level for your class?
_____
_____
4. Was the amount of material discussed: Enough__ Overwhelming__ Not Enough__
5. Should any parts of the presentation be developed further? If so, which parts?

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6. Was there sufficient time for questions and answers? Yes No
7. Were you studying astronomy or another related subject at the time of the planetarium's visit? Yes No
If so, was the planetarium visit helpful?
_____
8. Was the Teacher's Guide helpful in preparing your class for the planetarium visit?
Yes__ No__ Which parts were most helpful?
_____
_____
_____
9. Did the presenter present the material in a clear and understandable fashion?
_____
10. How would you rate the overall program given to your class in the planetarium?
_____
11. (Optional) Your name & school:_____
Please feel free to write any *further comments* on the back.
Thank you for your time! Your Comments Make a Difference!