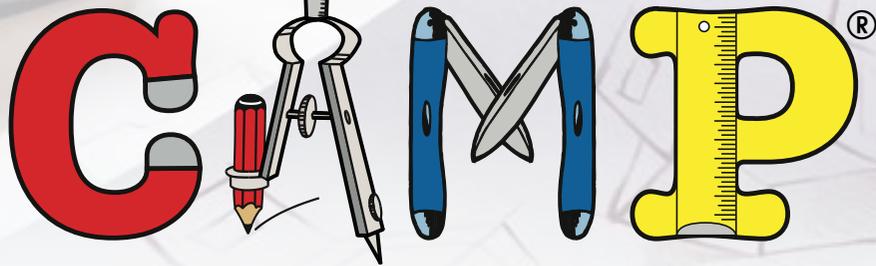


SUMMER MANUFACTURING



NUTS, BOLTS & THINGAMAJIGS

CAMP HOST HANDBOOK

nbtfoundation.org



**EVERYTHING YOU NEED TO KNOW BEFORE,
DURING, AND AFTER YOUR CAMP.**

NUTS, BOLTS & THINGAMAJIGS
The Foundation of the Fabricators & Manufacturers Association, Intl.

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Camp Directors, Staff, and Instructors — THIS HANDBOOK WILL HELP YOU PLAN your summer manufacturing camp. Please read through the materials carefully. Contact the NBT Foundation office at foundation@fmamfg.org or **888-394-4362** with any questions.

Camp Objectives, Learning Activities, and Desired Outcomes:

- To introduce students to the world of manufacturing through hands-on projects made in real “shop” facilities, presentations by industry professionals regarding careers and training, and site visits to manufacturing facilities.
- To introduce students to basic entrepreneurial concepts and skills.

Approximately 80% of contact time should be spent on manufacturing skills, processes, projects, and facility tours while 20% of contact time should be spent on the introduction of entrepreneurial concepts and skills. Some of the entrepreneurial content can effectively be delivered by guest presenters during plant tours or at the camp location, as well as during evaluations of the projects built by students. Several entrepreneurship lessons contained in the camp materials have been designed as homework so students can get their parents and family involved.

Expected learning activities:

1. Students are guided through a basic shop safety lesson and taught how to practice shop safety based on the safety manual provided to camp hosts.
2. Students learn basic computerized product design using CAD software (student licenses of SolidWorks® will be provided by NBT if requested by the camp).
3. Students manufacture a product — start to finish — using manufacturing equipment, hand tools, and other appropriate aids.
4. Students explore and gain a basic understanding of the challenge of an inventor / entrepreneur in taking a product from idea to business. Lessons are provided in the curriculum on topics such as new product creation, pricing, marketing / advertising, etc.
5. Students learn about the types of manufacturing jobs available in the local community through tours of local manufacturing companies, presentations and mentoring by local manufacturing professionals, and other appropriate activities.
6. Students learn about the teamwork required in an effective manufacturing work environment.
7. Students gain an understanding of the kinds of academic and technical training they will need (in high school and beyond) to prepare themselves for future manufacturing careers.

Preparation and Responsibilities Before, During, and After Camp



PRIOR TO CAMP:

1. Camp hosts will receive their initial grant installment (75% of the total grant award) in February.
2. Camp instructors must determine an appropriate project for the campers to make and take home. A list of product ideas successfully completed in previous camps is provided on page 5.
3. The camp host school / organization is responsible for all camp marketing / promotions to their local community and for registering all camp participants. NBT will provide customizable marketing materials to each host that can be utilized for camp promotions. In addition, each camp will be posted on the NBT website and promoted through NBT media channels.



DURING THE CAMP:

1. On or before the first day of camp, staff must obtain signed NBT photo release forms for each participant from parents / guardians. (A sample photo release form is provided on page 11.)
2. On the first day of camp, participants will take the pre-camp survey online. NBT will provide each camp host with the survey link in advance of the camp start date. (A sample pre-camp survey is provided on page 6.)

4. Camp staff should arrange to purchase or obtain donated materials needed to complete the manufacturing project.
5. If the camp does not already have the capacity to allow students to work with CAD software, NBT will provide student-version SolidWorks CAD design software licenses for all camp participants. These 365-day licenses are generously donated by SolidWorks. Donated software can be installed on students' personal computers only. Schools that have purchased SolidWorks through a reseller can download the trial student version software for use during the NBT camp.
6. Camp staff should prepare shop equipment, hand tools, and other elements of the work area to facilitate smooth and efficient movement by students from one phase of the product manufacturing process to another.
7. Camp staff should schedule visits to local manufacturers and confirm guest speakers.
8. Ideally, camp staff will request financial support from local manufacturers, community organizations, economic development groups, and other local agencies and businesses to supplement the grant provided by NBT and the registration fees collected from students.

3. Staff should document camp activities in photos which will be shared with NBT for inclusion on the foundation's website, in magazines published by the Fabricators and Manufacturers Association (FMA), through NBT's social media, and in promotional and fundraising materials produced by NBT. **Your best 10 to 20 camp photos should be shared with NBT.**
4. Staff should also consider recording some of the camp activities to create a promotional video that can be shared on Facebook and YouTube. Videos can also be great tools for recruiting future camp participants. Examples of camp videos can be found at nbtfoundation.org/camps.
5. On the last day of camp, participants will take the post-camp survey online. NBT will provide each camp host with the survey link in advance of the camp start date. (A sample post-camp survey is provided on page 7.)



AFTER CAMP HAS ENDED (within 30 days of the final day of camp):

1. The director or camp staff will complete the online evaluation survey and submit a complete financial report to NBT in order to receive the second grant installment (25% of the total grant award). NBT will provide each camp host with the evaluation survey link and financial report template in advance of the camp start date.

2. Within the online evaluation survey, camps will be asked to provide NBT with contact information for local supporters, manufacturers, entrepreneurs, speakers, tour locations, and donors. (A sample final evaluation report is provided on pages 8-10.)
3. Submit your best 10 to 20 camp photos and video files to NBT. Full instructions for uploading your photos and videos will be provided prior to your camp.

If you need assistance or have questions, contact:

Dana Brown
Nuts, Bolts & Thingamajigs
 2135 Point Blvd
 Elgin, IL 60123
dbrown@fmamfg.org
 815-227-8205

Previous Camp Manufacturing Projects and Ideas

Following are projects that were constructed in past camps:

- Electric guitar
- Key chains
- Dice and chess pieces
- Windmill
- Soda can airplane
- Bridge
- Rube Goldberg machine
- Metal dinosaur
- Metal chair
- Ball-drop game
- Picture frames
- Outdoor fire pit
- Personal electronic device holder (cell phone, iPod)
- Single hole paper punch
- Outdoor grill
- Wood candle holder
- Metal candle holder
- Rose flower
- Storage box
- Star
- Plant holder
- Radio-controlled car
- Lawn ornament
- Aluminum accent lamp
- Dog tags as jewelry, luggage, or pet ID tags
- Hovercraft
- Machined game
- Brass ink pen
- Mill-spec dominos
- Tool box
- Bottle opener
- Metal table
- Children's swing
- Functional metal art objects
- Pliers
- Wrought-iron end table
- Horseshoe coat hook
- Trivet / hot plate
- Small decorative welded project
- Mailbox
- Metal organizer for electronics
- Finger rings
- Aluminum engraved desk plate
- Accent lamp
- Welded artwork
- Robot
- Hammer
- Thermoformed plastic projects: bottles, cup holders
- Functional metal art for placement in community
- Power tool dragster
- Model-size motorcycle
- Wind turbine
- Clock
- RF Controlled robotic vehicle
- Remote controlled mini forklift

SAMPLE: Pre-Camp Survey

This survey should be completed by all camp participants on the FIRST DAY of camp



These are examples only and do not include all survey questions. A link will be provided by NBT for the camp host to administer the survey to students online on the first day of camp.

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If you are in high school, are you currently enrolled in or did you elect to enroll in science, technology, engineering, mathematics (STEM) courses at your school?

Part II

Please list them:

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5
- Course 6

After high school graduation, you plan to:

- Go on to a 2-year college
- Go on to a 4-year college
- Join the work force
- Work full time.
- Go to a technical/vocational school.
- I don't know yet.
- Other (please describe):

For the following, please choose the option that represents how you feel about the statement:

Manufacturing Careers

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. I am aware of career options in manufacturing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I am familiar with science, technology, engineering, and mathematics (STEM) courses needed in middle and high school to prepare for careers in manufacturing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. I will likely elect to take a course in engineering, technology, or robotics in school next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. I will consider a career in advanced manufacturing or related technical industries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. Manufacturing is essential to the economy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Manufacturing careers offer high paying jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Manufacturing careers provide a stable lifestyle.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. I would consider starting my own business (being an entrepreneur).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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SAMPLE: Post-Camp Survey

This survey should be completed by all camp participants on the LAST DAY of camp



These are examples only and do not include all survey questions. A link will be provided by NBT for the camp host to administer the survey to students online on the last day of camp.

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Part II

Thank you for attending this summer camp. We hope you found it a useful way to learn more about advanced manufacturing and career options.

For the following, please choose the option that represents how you feel about the statement:

Manufacturing Careers

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
a. I am aware of career options in manufacturing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I am familiar with science, technology, engineering, and math and high school to prepare for careers in manufacturing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. This camp helped me better understand how science, technology, and engineering are used in industry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. I will likely elect to take a course in engineering, technology, or math in high school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. I will consider a career in advanced manufacturing or related technology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. The activities I took part in helped me make the connection between school and industry applications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. The camp provided opportunities for teamwork and collaboration.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Overall, how satisfied are you with the summer camp?

- Very Satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very Dissatisfied

From the list below, choose your favorite part of the camp:

- Operating equipment or machinery
- CAD/CAM (Design work)
- Welding
- Entrepreneurship activities
- Touring local manufacturers
- Guest speakers
- The instructors
- Special projects
- Other

SAMPLE: Final Evaluation & Financial Report



Within 30 days of the last day of camp, directors must complete the online evaluation survey and provide a financial report to NBT in order to receive the second installment of the camp grant funding.

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Section 1: General Information

Grantee refers to the school or organization that received grant funds awarded by NBT. Camp location is the physical location where the camp was held.

Camp Grantee Information:

Grantee School / Organization	<input type="text"/>
Contact First Name	<input type="text"/>
Contact Last Name	<input type="text"/>
Grantee Address	<input type="text"/>
Grantee City	<input type="text"/>
Grantee State	<input type="text"/>
Grantee Zip Code	<input type="text"/>
Contact Phone	<input type="text"/>
Contact Email	<input type="text"/>

Camp Location, if different from Grantee:

School / Organization	<input type="text"/>
Address	<input type="text"/>
City	<input type="text"/>
State	<input type="text"/>
Zip Code	<input type="text"/>

These are examples only and do not include all survey questions. A link to the online report will be provided to the camp director prior to the camp start date.

Camp Information:

Camp Name	<input type="text"/>
Start Date (mm/dd/yyyy)	<input type="text"/>
End Date (mm/dd/yyyy)	<input type="text"/>

What was the primary manufacturing technology introduced to camp participants?

- 3D Printing
- CAD/CAM
- CNC
- Coding/Programming
- Electronics
- Laser Processing
- Machining

Section 2: Partnerships with Manufacturers and Sponsors

How many local sponsors, organizations, or manufacturers provided **financial support, in-kind support, or general support** such as providing a guest speaker, hosting a plant tour, serving as a mentor/volunteer, or giving a monetary donation?

You will be asked to provide detailed information for the number of organizations you indicate.

Number of Sponsors and Supporting Organizations:

Next



These are examples only and do not include all survey questions. A link to the online report will be provided to the camp director prior to the camp start date.

Section 3: Camp Participant and Camp Staff Demographics

How many students registered and completed your camp?

Registered: [input]
Completed: [input]

Please Note: The following questions are to help us better understand the demographics of populations that NBT camps are serving. We are looking for percentage estimates, not individual student or staff member data. Responses will not be used to modify policies, influence funding and grant decisions, or impact relationships with camp providers.

Please provide the percentage of students at your camp who are economically disadvantaged:

Low %
0 20 40 60
% of students considered economically disadvantaged: [slider]

Section 4: Hosting an NBT Manufacturing Camp - Benefits to Your Institution

Please give an assessment of how successful the camp was in fulfilling the following goals and program objectives:

Table with 5 columns: Very Successful, Somewhat Successful, Neutral, Fairly Successful, Not at All Successful. Rows include: Exposing students to the world of manufacturing; Providing learning opportunities through hands-on projects made in a manufacturing environment.

Section 5: NBT Camps - Creating Career Pathways in Manufacturing

NBT's main goal is to increase the number of people who pursue career pathways related to manufacturing and work in manufacturing environments.

In what ways have you promoted manufacturing careers to students attending your camps and enrolled in your school's manufacturing programs? Please check all that apply.

- Recruit camp participants to your educational institution...
Inform camp participants what programs/certifications are available...
Inform camp participants about NBT scholarship opportunities...
Provide camp participants with opportunities to visit manufacturing plants...
Inform camp participants of CTE (Career and Technical Education) programs at high schools...
Partner with local high schools/community colleges...
Involve camp participants' parents in camp by inviting them to team presentations, competitions, or last day of camp...
Offer advanced camps and/or mentorships for returning campers...
Inform participants about apprenticeships/internships...

Section 6: Hosting a Manufacturing Camp - Working with NBT

Please rate your overall satisfaction in working with NBT.

- Very satisfied
Satisfied
Neither satisfied nor dissatisfied
Dissatisfied
Very dissatisfied

Please comment on your partnership with Nuts, Bolts & Thingamajigs during this camp experience.

[Text input box]

0% 100% [Progress bar]

SAMPLE: Final Evaluation & Financial Report *(continued)*

This is an example only. A link to the online report will be provided to the camp director prior to the camp start date.



Section 7: Financial Report

REVENUES

NBT Grant Funding	\$ 0
In-Kind Donations	\$ 0
Registration Fees	\$ 0
School / Grantee's Funds	\$ 0
Other Funding Sources	\$ 0
Total	\$ 0

Capital / Equipment	\$ 0
Contract Services	\$ 0
Facility Rental / Lease	\$ 0
Food	\$ 0
Printing / Publicity	\$ 0
Salary / Benefits	\$ 0
Supplies / Materials	\$ 0
Travel	\$ 0
Utilities	\$ 0
Other	\$ 0
Total	\$ 0

Total Revenues (from above)	\$ 0
Total Expenses (from above, please leave the "-" (negative sign) prior to the number you enter as this will automatically be subtracted from the Total Revenue)	\$ -
Total	\$ 0

I verify that the financial figures entered above are accurate to the best of my knowledge.

× SIGN HERE

clear

Consent Agreement and Photo Release for Camp Participants



CAMP STAFF: Please distribute this form to each camp participant on or before the first day of camp. A signed release form must be collected from each participant and returned to NBT.

In connection with my or my child’s participation in this Summer Manufacturing Camp, I hereby authorize the Fabricators and Manufacturers Association® (FMA), Nuts, Bolts & Thingamajigs® (NBT), its partners The Association for Packaging and Processing Technologies (PMMI) and Chemical Coaters Association International Finishing Education Foundation (CCAI FEF), its national sponsor Nestlé USA, its other supporters, their affiliates, successors and assigns (collectively the “Companies”), the right to take, record, utilize, and/or publish (i) photographic, digital, or video images of myself and/or the minor child or children listed below; (ii) our names and likenesses; (iii) artwork produced by my child during the camp; and (iv) comments submitted as a result of my child’s camp experiences (collectively the “Images and Statements”) for use in the Companies’ print, online and video-based marketing materials, as well as the authorized publications listed below and for all lawful purposes (including but not limited to advertising, marketing, trade or any commercial purposes) in all forms and media now existing or hereinafter devised, developed or created, throughout the world and in perpetuity. I waive the right to inspect or approve versions of the Images and Statements used by the Companies pursuant to this release agreement.

I hereby release, discharge, and agree to hold harmless the Companies, their directors, officers, employees, and agents from all claims, actions, causes of action, demands, rights, damages, costs, attorneys’ fees, losses, and expenses that may arise from or regarding the use of the Images and Statements, including but not limited to any claims of defamation, invasion of privacy, or infringement of moral rights, rights of publicity or copyright. I further release, discharge, and agree to hold harmless the Companies, their directors, officers, employees, and agents from any liability, whether intentional or otherwise, that may occur or be produced in the development of any media created and used by the Companies, as well as the publication of such media, including without limitation any claims for libel or violation of any right of publicity or privacy or copyright infringement claims.

I hereby waive any right that I may have to inspect or approve any finished copy, photograph, video, or other media that may be developed and used by the Companies. I further waive any right to royalties or other compensation arising or related to the use of the Images and Statements. The Companies are permitted, although not obligated, to include my name or the name of my child or children listed below in connection with use of the Images and Statements. The Companies are not obligated to utilize any of the rights granted in this release agreement. This release agreement expresses the complete understanding of the parties with respect to the use of the Images and Statements by the Companies.

Authorized Publications: This release applies to any of the magazines, publications, and printed media of the Companies, as well as the websites, the quarterly newsletters, and the social media channels maintained and managed by the aforementioned organizations, collectively referred to as the Companies.

I have read and understood this release agreement. I attest that I am the participant or the parent or legal guardian of the child or children listed below and that I have full authority to consent and authorize the Companies to use the Images and Statements.

Camp Name _____

Camp Location _____ Date _____

Participant Name(s) _____

Parent / Guardian Signature *(if participant is a minor)* _____

Print Parent / Guardian Name *(if participant is a minor)* _____





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