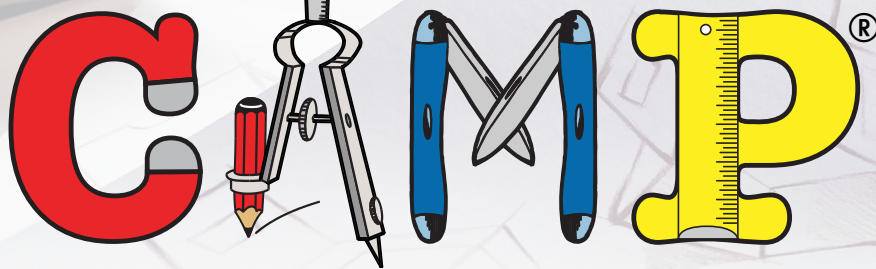


SUMMER MANUFACTURING



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@fmanet.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® and Mastercam 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. The staff members who will teach the camp need to determine an appropriate project for the campers to make. A list of product ideas successfully completed in previous camps is provided on page 5.
2. The camp host school / organization is responsible for marketing to their local community and registering students for the camp. NBT will provide customizable marketing materials and resources for each camp. In addition, each camp will be posted on the NBT website and promoted through NBT media channels.
3. Camp staff will arrange to purchase or obtain donated materials needed to complete the manufacturing project.
4. 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 in sufficient quantity to meet the needs of the camp. These 365-day licenses are donated by SolidWorks through its sponsorship with NBT.
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. On the marketing form, camps must notify NBT if they wish to receive the SolidWorks licenses and provide the number of participants.
5. Camp staff prepares shop equipment, hand tools, and other elements of the work area to facilitate smooth and efficient movement by students from one phase to another of the product manufacturing process.
6. Camp staff arranges visits to local manufacturers, confirms guest speakers, etc.
7. Camp staff requests financial support from local manufacturers, community organizations, economic development groups, and other local agencies and businesses which can supplement the grant provided by NBT and the tuition collected from students.



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 with the survey link in advance of the camp start date. (A sample pre-camp survey is provided on page 6.)
3. Staff arranges to document camp activities in photos which will be shared with NBT for inclusion on the foundation's website, in magazines published by 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 the school or organization's Facebook page, the NBT Facebook page, and / or YouTube channel. Videos can also be great tools for recruiting students into a camp in the future. 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 with the survey link in advance of the camp start date. (A sample post-camp survey is provided on pages 7.)



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

1. The director or staff will complete the online evaluation survey and submit a complete financial report in order to receive the second grant payment. NBT will provide each camp 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@fmanet.org
 815-227-8205

Previous Camp Manufacturing Projects and Ideas

The following represent the kinds of projects that were constructed in past camps:


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

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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www.nbtfoundation.org

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

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"/> |

Please list them:

Course 1

Course 2

Course 3

Course 4

Course 5

Course 6

After high school graduation, I 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):

| | 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"/> |

Previous


Next

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 from 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. 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 manufacturing in college. | <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

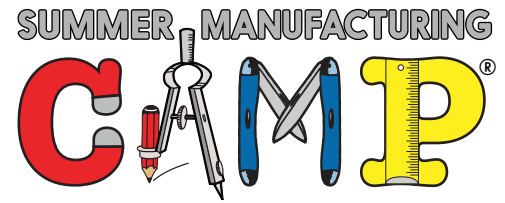
☐ Guest speakers

☐ 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.

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.



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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"/> |

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



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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:



Section 3: Camp Participant and Camp Staff Demographics

How many students registered and completed your camp?

Registered:

Completed:

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:



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:

| | Very Successful | Somewhat Successful | Neutral | Fairly Successful | Not at All Successful |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Exposing students to the world of manufacturing: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Providing learning opportunities through hands-on projects made possible by the camp: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Providing a safe and secure environment for students: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Providing a positive learning experience for students: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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's manufacturing program.
- ☐ Inform camp participants what programs/certifications are available in manufacturing.
- ☐ Inform camp participants about NBT scholarship opportunities for manufacturing program students.
- ☐ Provide camp participants with opportunities to visit manufacturing plants.
- ☐ Inform camp participants of CTE (Career and Technical Education) programs in high schools.
- ☐ Partner with local high schools/community colleges to provide manufacturing programs.
- ☐ Involve camp participants' parents in camp by having them to team presentations, competitions, or last day of camp.
- ☐ Offer advanced camps and/or mentorships for camp participants.
- ☐ 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.

0% 100%

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 | \$ <input type="text" value="0"/> |
| In-Kind Donations | \$ <input type="text" value="0"/> |
| Registration Fees | \$ <input type="text" value="0"/> |
| School / Grantee's Funds | \$ <input type="text" value="0"/> |
| Other Funding Sources | \$ <input type="text" value="0"/> |
| Total | \$ <input type="text" value="0"/> |

| | |
|-------------------------|--|
| Capital / Equipment | \$ <input type="text" value="0"/> |
| Contract Services | \$ <input type="text" value="0"/> |
| Facility Rental / Lease | \$ <input type="text" value="0"/> |
| Food | \$ <input type="text" value="0"/> |
| Printing / Publicity | \$ <input type="text" value="0"/> |
| Salary / Benefits | \$ <input type="text" value="0"/> |
| Supplies / Materials | \$ <input type="text" value="0"/> |
| Travel | \$ <input type="text" value="0"/> |
| Utilities | \$ <input type="text" value="0"/> |
| Other | \$ <input type="text" value="0"/> |
| Total | \$ <input type="text" value="0"/> |

| | |
|---|--|
| Total Revenues (from above) | \$ <input type="text" value="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) | \$ <input type="text" value="-"/> |
| Total | \$ <input type="text" value="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 & Manufacturers Association, International® (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.

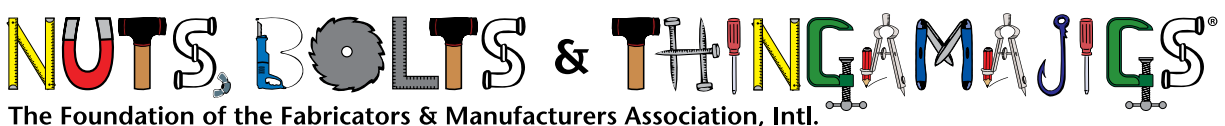
I have read and understood this release agreement. I attest that I am the parent or legal guardian of the child or children listed below and that I have full authority to consent and authorize the Companies to use the Images and Statements.

Camp Host Location (School) _____ 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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