EVERYTHING YOU NEED TO KNOW BEFORE, DURING, AND AFTER YOUR CAMP.
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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 3.

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. Free Mastercam licenses are also offered to camps thanks to Mastercam's generous sponsorship. Donated software can be installed on students’ personal computers only. Schools that have purchased SolidWorks or Mastercam 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 and / or Mastercam 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 9.)

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 4.)

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 5.)
PREVIOUS CAMP MANUFACTURING PROJECTS AND IDEAS

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

- Electric guitar
- Key chains
- Dice and chess pieces
- Windmill
- Soda can airplane
- Bridge
- Rube Goldberg project
- Assemble robots
- CD / DVD holders
- Ball-drop game
- Picture frames
- Jet toys, steel-can rovers
- Personal electronic device holder (cell phone, iPod)
- Single hole paper punch
- Grill
- Candle holders
- 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
- Hover craft
- Machined game
- Brass ink pen
- Mill-spec dominos
- Tool box
- Bottle opener
- Table lamp
- 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 components
- 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

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
SAMPLE — PRE-CAMP SURVEY

THIS SURVEY SHOULD BE COMPLETED BY ALL CAMP PARTICIPANTS ON THE FIRST DAY OF CAMP

This is an example only and does 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.

For the following statements, please choose the option that best represents your answer:

I am aware of career options in manufacturing.

Yes ▼
No ▼

I am interested in a career in advanced manufacturing.

Yes ▼
No ▼

I am familiar with science, technology, engineering, and mathematics (STEM) courses needed in middle school and high school to prepare for careers in manufacturing.

Yes ▼
No ▼

This camp helped me better understand how STEM courses are used in the industry.

Yes ▼
No ▼

I will likely take a course in engineering, technology, or robotics in school next year.

Yes ▼
No ▼

My Skills and Abilities

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I understand how to design a product using a computer software program.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I understand how to construct a product start to finish using manufacturing equipment and tools.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I understand how to practice appropriate shop safety.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I understand how to take a product from an idea to a business.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
SAMPLE — POST-CAMP SURVEY

This survey should be completed by all camp participants on the last day of camp.

For the following statements, please choose the option that best represents your answer:

I will consider a career in advanced manufacturing or related technical industries.

Yes ▼
No ▼

The activities I took part in helped me make the connection between camp activities and real-world applications.

Yes ▼
No ▼

What did you like best about the camp?

What did you like least about the camp?

What would you change about the camp?

Manufacturing Knowledge

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know the types of manufacturing jobs available in my local community.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I understand the training needed for a future manufacturing career.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I understand how people work together to create an effective manufacturing work environment.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>People can use their creative skills in manufacturing careers.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
# SAMPLE — FINAL EVALUATION 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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**This is an example only and does not include all survey questions.** A link to the online report will be provided to all camp directors prior to their camp start date. Please do NOT complete this report.

### Camp Information:

- **Camp Name**
- **Start Date**
- **End Date**

### Location Information:

- **Facility / School Name**
- **Address**
- **City**
- **State**
- **Zip Code**

### How many students registered and completed your camp program?

- **Registered:**
- **Completed:**

### Please provide the racial demographics of the students (should total 100%)

- **% American Indian and Alaska Native,**
- **Native Hawaiian and Other Pacific Islander:**
- **% Asian:**
- **% Biracial or Multiracial:**
- **% Black or African American:**
- **% White:**
- **% Other Race:**

### Please indicate the percent of students who identify as Latino or Hispanic (of any race, should total 100%):

- **% Latino or Hispanic:**
- **% Not Latino or Hispanic:**
Please give an assessment of how successful the camp was in fulfilling the program objectives: 1. introducing students to the world of manufacturing through hands-on projects made in real “shop” facilities and 2. introducing students to basic entrepreneurial concepts and skills.

List the primary goals and objectives for your camp as stated on your application. Beneath each goal, state the degree to which it has been accomplished. Be sure to include any adjustments made to the original goals or objectives. Comment on factors that contributed to accomplishing, exceeding, or not accomplishing your original goals and objectives.

What major changes (if any) did you make in procedures and activities after the beginning of the camp?

Were there unexpected successes, strengths, and benefits of this program? If yes, please describe.

What major obstacles or problems did you encounter?

What new ideas for improving this program or ideas for other programs surfaced as you learned from this project?

Overall, what have you learned from this camp? How will it impact the manufacturing industry in your community? What advice or encouragement can you offer to others who may attempt a similar effort?
**SAMPLE — FINANCIAL REPORT**

This is an example only. The report will be provided to all camp directors prior to their camp start date. Please do NOT complete this report.

<table>
<thead>
<tr>
<th>Name of School / Organization:</th>
<th>Community College</th>
<th>Date of Report:</th>
<th>/</th>
<th>/</th>
</tr>
</thead>
<tbody>
<tr>
<td>City, State</td>
<td>Elgin, IL</td>
<td>Person submitting report:</td>
<td>John Doe</td>
<td>Title: Camp Instructor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Camp Name(s)</th>
<th>NBT Manufacturing Camp</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Date of Camp(s)</td>
<td></td>
<td></td>
</tr>
</tbody>
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**REVENUES:**

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NBT Grant Funding</td>
<td>$ 2,000.00</td>
<td>$ 2,000.00</td>
</tr>
<tr>
<td>Registration Fees</td>
<td>$ 720.00</td>
<td>$ 720.00</td>
</tr>
<tr>
<td>School / Grantee's Funds</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>In-Kind Donations</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Other Funding Sources</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td><strong>TOTAL REVENUES</strong></td>
<td>$ 2,720.00 $ -</td>
<td>$ -</td>
</tr>
</tbody>
</table>

**EXPENSES:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Salary / Benefits</td>
<td>$ 172.50</td>
<td>$ 172.50</td>
</tr>
<tr>
<td>Contract Services</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Facility Rent / Lease</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Utilities</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Capital / Equipment</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Supplies / Materials</td>
<td>$ 1,852.23</td>
<td>$ 1,852.23</td>
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<tr>
<td>Travel</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Printing / Publicity</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Other</td>
<td>$ 219.30</td>
<td>$ 219.30</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSES</strong></td>
<td>$ 2,244.03 $ -</td>
<td>$ -</td>
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**NET REVENUE AFTER EXPENSES**

<table>
<thead>
<tr>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>$ 475.97</td>
<td>$ -</td>
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</tbody>
</table>

CERTIFICATION BY PROGRAM DIRECTOR: I have reviewed the above statement of Revenues and Expenses and find it to properly reflect the financial status of the named camp grant.

Signature: ____________________________  Date: ______________________

2135 Point Blvd, Elgin, IL 60123
888-394-4362 | 815-399-8700
nbtfoundation.org
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 for each participant. Upon collection of the signed forms, please scan and email them to Dana Brown at dbrown@fmanet.org.

I hereby authorize the Fabricators & Manufacturers Association, International® (FMA), Nuts, Bolts & Thingamajigs® (NBT), its partner The Association for Packaging and Processing Technologies (PMMI), their affiliates, successors and assign (collectively the “Companies”), the right to take, 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 experience (collectively the “Images and Statements”) for use in the Companies’ print, online and video-based marketing materials, as well as the other publications listed below.

I hereby release, discharge, and agree to hold harmless the Companies, its 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, 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.

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.

Authorized Publications: Any of the magazines published by FMA and its publishing company FMA Communications®, or PMMI and the PMMI Media Group, as well as the websites of those organizations and the NBT Foundation. In addition, the quarterly newsletters of NBT and PMMI and the social media channels maintained and managed by the aforementioned organizations.

Camp Location (School) ____________________________________________ Date ______________

Attendee Name(s) ________________________________________________

Parent / Guardian Signature _________________________________________

Print Parent / Guardian Name ________________________________________