



# THE AMERICAN SOCIETY OF

Central Oklahoma Section Newsletter  
Volume 15, Number 5, January 14, 2014

The Section is located at: Oklahoma Engineering Center, 201 Northeast 27<sup>th</sup> Street, Oklahoma City, OK 73105

The Central Oklahoma Section Newsletter is nominally published nine times per year to convey monthly meeting dates, meeting topics, section activities, and/or other ASME information to its membership.

**\*\*\*\*\* JOINT MEETING WITH THE OKLAHOMA AIAA SECTION \*\*\*\*\***

**PROGRAM TITLE: "Development and Testing of a Guidable Extended Range Tube Launched-UAV"**

**SPEAKER: Dr. Wade W. Huebsch**, Assoc. Prof., Mech. & Aero. Engineering, West Virginia University

**DATE: Thursday, January 23**

**LOCATION: Noble Center Atrium, OSU Campus, Stillwater, OK**

Tube Launched-Unmanned Air Vehicles (TL-UAV) are munitions that alter their trajectories during flight to enhance the capabilities by possibly extending range, increasing loiter time through gliding, and/or having guided targeting capabilities. Traditional munitions systems, such as tube-launched mortar rounds, are not guided. Performance of these "dumb" munitions could be enhanced by updating with TL-UAV technology.

The ability to actively control the flight path and extend range of a TL-UAV requires multiple onboard systems that must be identified, integrated, assembled, and tested to meet cooperative function requirements. The main mortar-based TL-UAV systems being developed at West Virginia University are considered to be a central hub to process information, aerodynamic control devices, flight sensors, a video camera system, power management, and a wireless transceiver. A camera is used to provide video for a "man-in-the-loop" operator to steer the munition. A wireless transceiver relays flight information gathered by sensors, such as an IMU, to an operator and to receive operator control inputs.

Program Description is continued on Page 2.

**Please join us for this meeting on January 23! PDH certificates will be available for attendees.**

**Time:** 6:00 - 6:30PM: Meet & Register at the OSU Noble Center Atrium; 6:30 – 7:00PM: Catered Meal  
Reassemble after the meal in NRC Room 106 for Program Events:  
7:00 – 7:15PM: Introductions & Section Business; 7:15 – 8:30PM: Presentation by Dr. Wade Huebsch.  
**Cost:** \$10 for Sr. members, \$5 for Student Members. Please place your reservation with Albert Janco (Ph: 405-848-1991 (leave message); e-mail: JANCOA@asme.org) by Tuesday, January 21 at NOON.

2013-2014 COS Executive Committee		Directors	Ex-Officio Directors
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<b>Frank Chambers, Ph.D., P.E.</b> .....Secretary Bus: 405-744-5901 ; <a href="mailto:chambersf@asme.org">chambersf@asme.org</a>		<b>Chulho Yang, Ph.D.</b> .....Director, K-12 Bus: 405-744-3033 ; <a href="mailto:chulho.yang@okstate.edu">chulho.yang@okstate.edu</a>	<b>Faculty Advisors</b>
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			<b>Rick Beier, Ph.D.</b> .....OSU-MET Bus: 405-744-9371 ; <a href="mailto:rick.beier@okstate.edu">rick.beier@okstate.edu</a>

## ADDITIONAL JANUARY MEETING INFORMATION

Program Description Continued: These systems do not naturally integrate with each other, therefore a central unit was used to handle and interpret signals from the systems. Each system has unique specifications for power and data requirements, which must be considered when selecting a central unit. Software running on the central unit handles processing of video, flight sensors, stability, control surface actuation, and course corrections received from an operator. Testing and assembly of the systems must meet stringent launch acceleration loading due to the  $\approx 2,000$  g's experienced during launch of the projectile. This presentation describes the identification of appropriate systems, their interactions, and ruggedization methods for a TL-UAV that can glide to increase range and be video-relay guidable.

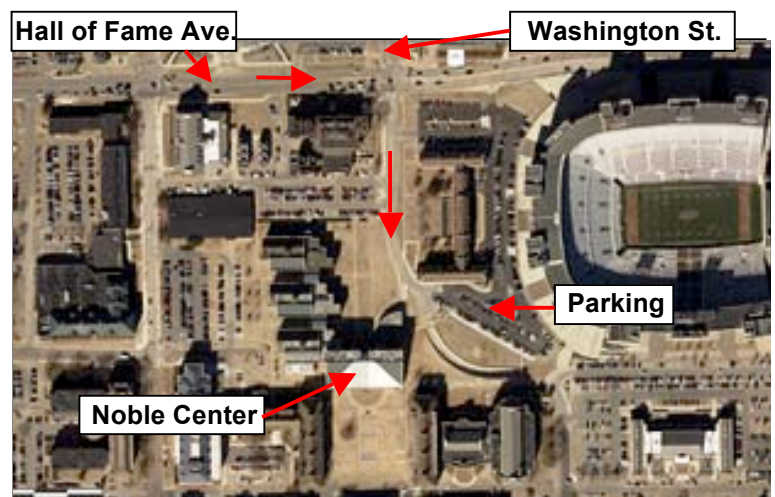


WADE W. HUEBSCH is an Associate Professor in Mechanical and Aerospace Engineering at West Virginia University. His PhD is in Aerospace Engineering from Iowa State University (2000). His research interests include diverse topics in fields such as Aerodynamics, Computational Fluid Dynamics, Flow Visualization, Unsteady Flow Separation, Atmospheric Icing, Wing Morphing and Fundamental Fluid Mechanics. His teaching interests include Fluid Dynamics, Aerodynamics, Computational Fluid Dynamics, and Numerical Methods. He is co-author of the popular text *Fundamentals of Fluid Mechanics* by Munson et al.

An OSU-Stillwater campus aerial view with the Noble Center is shown here. It is located at the north end of the Library lawn. Parking is north of the Advanced Technology Research Center, a short distance NE of the Noble Center. A more detailed map is available at:

[http://www.parking.okstate.edu/maps/maps\\_parking/CW\\_Parking.pdf](http://www.parking.okstate.edu/maps/maps_parking/CW_Parking.pdf)

From west Stillwater, turn north from Highway 51 onto Western St. and follow it north and east to campus and Hall of Fame Avenue. Turn south at Washington St. to the indicated parking area.




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### ASME Student Section Members Note: Scholarship Application

Our ASME Section will again award scholarships to Oklahoma ASME Student Section engineering students. The application form is on pages 7-10 of this newsletter. Deadline for scholarship application submission is March 31, 2014. Contact Frank Parker for more information (see page 1 for contact information).

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Sponsored by the Oklahoma Engineering Foundation, the annual **Engineering Fair** will be **Tuesday, February 18** at **Rose State College in Midwest City**. Youngsters from all over Oklahoma will be in attendance so this event offers a great chance to introduce students to engineering and technology.

Students may participate in a number of activities including the Bridge Building Contest, the Eiffel Tower Contest, Electric Motor Contest, Essay Contest, Ping Pong Ball Launcher Contest, Rubber Band Powered Vehicle Contest sponsored by ASME (our Section), and Wacky Wonder Works.

We will need volunteers to help with our Rubber Band Powered Vehicle Contest. **If you would like to help, please contact Ed Reynolds, Albert Janco, or Bill Green** (see page 1 for contact information).

**To: All ASME Members with an “@asme.org” E-mail Alias**

From: Michael Kreisberg, ASME Director of Membership Development

**IMPORTANT INFORMATION ABOUT YOUR “@ASME.ORG” EMAIL ALIAS**

We have some exciting news to share about your “@asme.org” e-mail alias member benefit! ASME will be providing you with a new and improved junk mail filtering service from Symantec, a worldwide leader in computer and internet security. The new Symantec Cloud Spam Manager service will offer a more effective and efficient platform for identifying and blocking junk emails and will replace the current Postini service, which Google has discontinued for its corporate customers.

**Activation of this new, improved junk mail filtering service is automatic - You don't need to do anything!**

Once your junk mail messages are quarantined, Symantec will send you a digest of the quarantined spam for that day. You will have the option to review the quarantined messages or ignore them (once you feel comfortable that Symantec is properly guarding you against spam). You can also choose to deliver a quarantined message to your inbox directly from the digest mail.

Symantec uses an advanced approach to identify and block spam. So there is no need to set thresholds on individual spam categories, as with Postini. You'll find fewer false positives and that Symantec does a superior job of catching spoofed email (such as spoofed e-mail messages that appear to be both *FROM*: you and *TO*: you)

To log into your Spam Manager account, use the link at the bottom of your first digest message to review messages, specify the desired frequency of your digest mail notifications, and manage your approved and blocked senders list. You can also access your Spam Manager account anytime using the following link: <https://spammanager-6.messagelabs.com>.

The first time you visit your Spam Manager account you will need to reset your password. To do so, simply:

1. Enter the email address that ASME has on record for your customer account, which is: myid@asme.org
2. Select “**Forgot Your Password?**” below the Login box.
3. Retrieve the password reset e-mail message sent to your email account. It will contain a link to click and launch the Spam Manager and set your permanent password.

A handy FAQ that should answer most of the questions you may have about the new Symantec platform is available at: <http://files.asme.org/asmeorg/35325.pdf>. Of course, you are also invited to contact ASME Customer Care at [customercare@asme.org](mailto:customercare@asme.org) or (800) 843-2763 should you need further assistance.

We think you will find the new Symantec service to be a valuable improvement to your “@asme.org” email alias member benefit. As always, we thank you for your ongoing loyalty to ASME!

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(Abridged)

***Economists are coming to see it as the key to innovation, economic health, and national security.***

(by Tom Kurfess. Article courtesy [asme.org](http://www.asme.org): [https://www.asme.org/engineering-topics/articles/technology-and-society/why-manufacturing?cm\\_sp=Technology%20Society-\\_-Feataured%20Articles-\\_-Why%20Manufacturing](https://www.asme.org/engineering-topics/articles/technology-and-society/why-manufacturing?cm_sp=Technology%20Society-_-Feataured%20Articles-_-Why%20Manufacturing))

Services make up nearly two-thirds of the U.S. economy. Manufacturing accounts for only 12 percent. For many decades, economists looking at this disparity argued that manufacturing played a minor role in the modern economy, and that \$1 billion generated by warehousing, transportation, and retailing produced the same economic benefits as \$1 billion in production.

They were wrong. Over the past decade, more and more economists have confirmed that manufacturing is indeed different from services. It is essential to innovation, and tightly linked to our nation's economic health and national security.

First, while manufacturing might be a small component of the U.S. economy, its output still came to \$1.9 trillion in 2012, and by itself would have made the world's tenth largest economy. The U.S. manufacturing sector was larger than the total economies of India, Canada, Mexico, or South Korea.

The United States was the world's leading producer of manufactured goods from 1895 through 2009. Although some experts estimate that Chinese output surpassed that of the U.S. in 2012, the United States remains the world's largest advanced technology producer. Manufactured goods constituted 86 percent of all U.S. exports in 2010.

According to the Bureau of Economic Analysis, every dollar spent in manufacturing generates \$1.48 in economic activity, more than any other major economic sector. Also, improvements in productivity have leveraged the productive power of the American worker, enabling more manufacturing output per person.

These arguments about the importance of manufacturing are important and well known. But what has changed the minds of many economists over the past decade is that manufacturing plays an essential role in innovation. While manufacturing is only 12 percent of the U.S. economy, it accounts for two-thirds of all private spending on R&D. While it provides only 9 percent of U.S. jobs, it employs one out of three engineers. Fully 60 percent of royalties from licensing intellectual property go to manufacturing firms.

Manufacturing is the engine that drives U.S. innovation. It transforms laboratory research into new products and production processes that generate profits and make the world a better place. It creates new and vital industries, ranging from computers and wireless to biotechnology and solar power. As engineers and manufacturers develop new technologies, they build the capabilities to extend and innovate in new fields. Those innovations give manufacturers the performance or cost edge they need to compete in a crowded international marketplace.

This is where U.S. manufacturing runs into problems. We are not talking solely about the production of low-tech products by low-wage workers, which has moved overseas during the past decade. U.S. manufacturing innovation is lagging behind such high-wage nations as Germany and Japan. We increasingly import more advanced technology than we export. Global competitors continue to press our small and mid-sized firms.

Perhaps most troubling, we are losing the ability as a nation to take innovative prototypes and bench-top or laboratory processes and scale them to commercial production. We have seen many American innovations leave our shores to be produced overseas in countries that have built up their capabilities for cost-effective volume production. As they scale up manufacturing, they build the production know-how that will enable them to remain in the lead.

Most engineers are familiar with some products that have moved overseas, such as flat panel displays. But I want to recall an older product, one we rarely see anymore, because it teaches an essential lesson about technology and provides a reason for optimism.

Technologies have limited life-spans as illustrated by VCRs. Even though we lost out on VCR production, few people purchase VCRs today. That market is gone.

The same will one day be true of flat panel displays. My guess is that one day, in the not-too-distant future, we will replace flat panels with flexible displays that we can hang on a wall or fold into our pocket. These products will require entirely new production facilities and supply chains. So here is an opportunity for America to recapture not only a new product line, but a supply chain that makes those products possible.

U.S. researchers are leading the pack in the development and use of next generation flexible electronics. If we have learned our lessons from the off-shoring of consumer electronics, we should do everything in our power to scale that world-class research into production here in the United States.

This advantage grows as the pace of innovation speeds up. We are seeing new products and capabilities deployed at breathtaking speeds. Companies that scale the latest technologies the fastest will become the market leaders and reap most of the profit. This is the same strategy that Apple followed so successfully with successive generations of both the iPad and the iPhone. Each new version raised the bar for its competitors.

What the United States must do now is close the gap between innovation and commercial scale-up and production. It already leads the world in creating disruptive technologies. It is rapidly moving towards energy independence. The imposing wage gap that once separated it from other nations is closing. Now, it must widen the gap in innovation implementation.

Some American companies have begun re-shoring manufacturing operations located in other nations. I think that trend will grow stronger.

I also see a growing consensus for taking steps to ensure that the innovations invented in America get made in America. No one is talking about an industrial policy or picking winners and losers. Instead, they want to make it easier for domestic manufacturers and academia to work together to solve the practical problems of turning new and innovative technologies into commercial products and processes.

This is vital to our future, because manufacturing, and especially advanced manufacturing, is not just another sector of the economy. It is a cornerstone of a culture of innovation that makes the United States a world leader, and a land where dreams can truly be realized.

**THOMAS KURFESS**, an ASME Fellow, is a professor of mechanical engineering at Georgia Institute of Technology. He has also served as assistant director for advanced manufacturing at the White House Office of Science & Technology Policy.

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## NEWS ITEMS OF INTEREST

### ***This Ingenious Way to Build Bridges Will Fix Our Crumbling Infrastructure***

(courtesy NSPE's *Engineering Press Review* publication, November 11, 2013)

**Wired** (10/13, Damon Lavrinc) A construction technique being used in the revitalization of the I-84 corridor connecting New York and Connecticut will save money, limit closures, and could revolutionize how America repairs its failing infrastructure. The technique, called accelerated bridge construction (ABC), has been used on numerous small projects, but the I-84 project marks the first time a state transportation agency has used ABC on a major interstate. I-84 carries as many as 100,000 drivers a day, and if the state had chosen traditional replacement the project could have taken more than two years, involved multiple closures, and would require a temporary bridge that would have added \$2 million to the overall cost. However, the ABC process basically builds support structures around the existing bridge, constructs a new roadway on top, and then demolishes the old bridge while simultaneously sliding the new bridge into place on new supports. Construction on I-84 started last year, and included pre-made components being shipped while the construction of two new superstructures on temporary supports were mounted alongside current bridge, all without an interruption to traffic. For the hundreds of small bridges across the country in need of replacement, ABC provides a perfect solution, being low impact, less expensive, and faster. Bala Sivakumar, director of special projects for infrastructure design firm HNTB, acknowledges ABC is not perfect for every bridge, saying 20 spans over a river would be hard to replace, but for small towns and municipalities could be quick, cost-effect, and provide safer roads without inconveniencing motorists.

### ***Obama Signs Order on Response to Climate Change***

(courtesy NSPE's *Engineering Press Review* publication, November 11, 2013)

**Associated Press** (11/01/13, Matthew Daly) President Barack Obama has signed an executive order to make it easier for state and local governments to respond to weather disasters. The order, signed a year after Superstorm Sandy, establishes a task force of state and local officials to advise the administration on how to respond to sever storms and other natural disasters and potential impacts of climate change, including wildfires and droughts. The task force will look at federal money spent on roads, bridges, flood control, and other projects, and will recommend how structures can be made more resilient to the effects of climate change, such as rising sea levels and temperatures. The White House says the order recognizes that even as the U.S. moves to limit carbon pollution, officials also must improve states' ability to respond to extreme weather events like Sandy. The task force builds on efforts by the Obama administration announced in June to combat global warming, including the first-ever limits on climate pollution from new and existing power plants. Obama's plan aims to reduce domestic carbon dioxide emissions by 17 percent between 2005 and 2020. The plan, which would be enacted through executive order to bypass the stalled Congress, would also increase renewable energy production on federal lands, increase efficiency standards, and prepare communities to deal with higher temperatures.

## **Could Fracking Boom Peter Out Sooner Than DOE Expects?**

(courtesy NSPE's *Engineering Press Review* publication, November 11, 2013)

**USA Today** (11/03/13, Wendy Koch) Rising oil and gas production is slowly pushing the United States closer to energy independence, but new research suggests that the boom could fizzle out long before the U.S. reaches this long sought-after goal. Many wells involved in the energy rush are quickly losing productivity, while others could hit peak production sooner than the U.S. government expects, according to an analysis presented at a Geological Society of America meeting. J. David Hughes, an energy expert at the Post Carbon Institute, a research group focused on sustainability, says the downward trend is due to "sweet spots," small areas with the highest yields. Hughes says these spots don't last long, and more drilling becomes necessary to just maintain production. Hughes notes oil production in the Bakken shale of North Dakota, which skyrocketed between 2008 and 2012, has already started to slow down and Eagle's Ford in Texas may soon follow. However, some see a brighter future for the U.S. shale boom. William Fleckenstein, a petroleum engineering professor at the Colorado School of Mines, believes the boom will continue for decades, and that major shale regions are performing better than expected. While well productivity falls quickly after the first year or two, Fleckenstein says the initial gust gives investors a quick payback, and that technology is going to improve.

### Future ASME-Central Oklahoma Section Events

Date	Location	Program Topic and Speaker
Saturday Jan. 18, 2014	OC Campus Edmond, OK	Future City Regional Competition see <a href="http://www.okfuturecity.org">http://www.okfuturecity.org</a> for more information or to volunteer to help.
Thursday Jan. 23, 2014	OSU Campus Stillwater, OK	Section Meeting: Speaker: Dr. Wade W. Huebsch "Development and Testing of a Guidable Extended Range Tube Launched-UAV"
Tuesday Feb. 18, 2014	Rose State College Midwest City, OK	Annual OEF Engineering Fair – our ASME Chapter to host the Rubber Band Powered Vehicle Contest see <a href="http://oef.org/programs/engineeringfair">http://oef.org/programs/engineeringfair</a> for more information or to volunteer to help.
Thursday Feb. 20, 2014	Okla. Christian Univ. Edmond OK	Joint Engineering Societies Banquet Speaker & Program TBD

**Please visit our Section website:**

[https://community.asme.org/central\\_oklahoma\\_section/default.aspx](https://community.asme.org/central_oklahoma_section/default.aspx)

**IT'S BEEN REVAMPED.** Check event updates and other useful information!

**ASME Central Oklahoma Section Engineering Scholarship Application**

**E-Mail or Postmark Deadline: March 31, 2014 - Please follow-up e-mail applications with a mailed signed copy**

Applicant: \_\_\_\_\_  
 Last Name First Name Middle Initial

Home Address: \_\_\_\_\_  
 Street Address Apt No.  
 \_\_\_\_\_  
 City State Zip Code

Telephone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_ (Ext \_\_\_\_)

ASME Student Member\* #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Attending University: \_\_\_\_\_  
 (Central Oklahoma Institution with ABET Accredited Program Only\* - See Below)

**\* APPLICATION RULES & AWARD REQUIREMENTS \***

*Applicants must be in their Sophomore or Junior year when applying and enrolled full time (12 Credit Hrs per Semester Minimum) in a Mechanical Engineering or Mechanical Engineering Technology Degree Program at the following Oklahoma ABET accredited Universities within the Central Oklahoma Section's Geographic Area:*

*The University of Oklahoma (Norman), Oklahoma State University (Stillwater), & Oklahoma Christian University (Edmond).*

*Applicants must be members of their University's ASME Student Section to be eligible for a grant under this scholarship program. If you are not currently an ASME student member, you must be a member in good standing by the time of application submission.*

*Grant recipients must be ASME student members and be fully enrolled in a Mechanical Engineering or Mechanical Engineering Technology curriculum during the semester of their award. Those whose qualifications change during the award semester will be disqualified and have their grant rescinded and re-directed to the runner-up candidate.*

*Grant recipients are requested to keep their address information (residential and/or e-mail) current to allow the Central Oklahoma Section to contact them in the future to gage the outcome of their education, for statistical feedback purposes.*

**ACADEMIC OR PROFESSIONAL REFERENCE INFORMATION**

Name: \_\_\_\_\_ ASME Member (Yes/No): \_\_\_\_\_

Title, Employer: \_\_\_\_\_

Address: \_\_\_\_\_  
 Street Address Apt No.  
 \_\_\_\_\_  
 City State Zip Code

Telephone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_ (Ext \_\_\_\_)

E-mail (if known): \_\_\_\_\_

Connection/Relation to Candidate (Parent/Advisor/Employer/Mentor): \_\_\_\_\_

**ACADEMIC DATA SUMMARY**

Academic Course Hours Completed: \_\_\_\_\_ Current GPA: \_\_\_\_\_ Major: \_\_\_\_\_

Currently Enrolled Course Hours: \_\_\_\_\_ Expected Graduation Date: \_\_\_\_\_

*Please attach a current transcript or complete college grade record: either an original, official transcript with embossed seal/stamp or a printed (unofficial) copy signed by your ASME Advisor.*

Fill in the Student Activities Information in the spaces below, complete with your dated signature.

**STUDENT ACTIVITIES INFORMATION**

List all activities for the areas below. Include any offices held and the year serving in those offices. You may attach a separate page if more room is needed. Please type, print legibly, or complete electronically all information.

<b>Honorary Organizations:</b>

<b>Scholarships and Awards:</b>

<b>University Organizations and Professional Societies: <i>(including ASME Student Section positions held)</i></b>

<b>College or Departmental Organizations:</b>

<b>Extra-curricular Activities:</b>



<b>Work Experience and Community Service:</b>

Please write a short essay (1-3 paragraphs) of your professional goals and how you see your involvement in professional organizations (such as ASME) can aid in achieving them. Attach a separate page if more room is needed:

\_\_\_\_\_

Applicant's Signature

\_\_\_\_\_

Date

Attachments:

- Evidence of Attendance & Academic Performance** (transcript, resume/activity list w/ GPA info.)
- Financial Status/Need Data** (Financial Data worksheet, attached.)

**Return to:** Frank Parker, Director - ASME COS     *E-mail submissions to [parkerfj@asme.org](mailto:parkerfj@asme.org), must be followed-up with signed application, mailed to the address shown at left.*  
 6204 Waterford Blvd, No 28  
 Oklahoma City, OK 73118-1107

For the latest information on our Section Programs & Activities, please go online to:  
[https://community.asme.org/central\\_oklahoma\\_section/default.aspx](https://community.asme.org/central_oklahoma_section/default.aspx).

**ASME Central Oklahoma Section Engineering Scholarship Application - Financial Data**

Applicant: \_\_\_\_\_

Last Name

First Name

Middle Initial

**Estimated Annual Financial Data (from 1 June 2014 through 31 May 2015)**

Annual Sources of Funds	Amount	Annual Tuition & Expenses	Amount
Job Income	\$		\$
Student Loans	\$		\$
Other Scholarships/Grants	\$		\$
Support from Parents/Family	\$		\$
Personal Savings	\$		\$
Other	\$		\$
<b>Total</b>	\$	<b>Total</b>	\$

These figures reflect my financial situation accurately and completely.

\_\_\_\_\_  
Applicant's Signature

\_\_\_\_\_  
Date

Please note: this page must be submitted TOGETHER WITH the **Application Form** and **Evidence of Attendance & Academic Performance**, to form a complete application. Do not send this page separately!