

簽

民國100年12月13日

於學生事務處課外活動指導組

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裝

主旨：有關清華大學來文推派學生參與2012年美國機械工程師學會  
(ASME)學生競賽(SPDC)國內選拔賽案，簽請 核示。

說明：

- 一、依據國立清華大學本(100)年12月9日清動字第1000006487號  
函辦理。
- 二、旨揭美國機械工程師學會(ASME)學生競賽(SPDC)由新加坡分  
會主辦，國內將先進行初賽，國內賽第一名者，代表台灣至  
新加坡參加競賽。
- 三、檢附「2012年美國機械工程師學會(ASME)學生競賽(SPDC  
)國內選拔賽」活動辦法乙份如附。

訂

擬辦：

- 一、本文擬公告於本組網站、ptt、INFO校園公佈欄及網路書院，  
同學可自行組隊報名參加。
- 二、轉知工學院機械系。
- 三、文陳閱後存查。

線

公文流程：(陳核) 課外活動指導組→學生事務處

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承辦單位

會辦單位

決行

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## 2012 年美國機械工程師學會(ASME)學生競賽(SPDC)國內賽簡章

### 壹、前言：

美國機械工程師學會(ASME)成立於 1880 年，協會為一非營利事業組織，致力於促進工程科學界的技術合作、知識共享以及技能發展，並提升工程師在學會中的重要性。ASME 不僅規範現行機械運作標準，還出版相關刊物，並定期舉行機械相關研討會，更致力於永續教育和先進的專業科技發展計畫，以提供科技知識與更良好的環境。

### 貳、競賽宗旨：

- 一、提供培養專業機械工程師、領導人的技術平台。
- 二、創造國際間工程技術分享與交流。
- 三、提供參賽學生認識美國機械工程師學會的機會。

### 參、辦理單位：

- 主辦單位：美國機械工程師學會台灣分會  
承辦單位：美國機械工程師學會清華大學學生分會  
贊助單位：國立清華大學動力機械工程學系  
國家高速網路與計算中心

### 肆、競賽方式：

本次競賽屬於國內賽，如在國內賽取得優勝佳績，可獲得代表台灣參加 SPDC 亞太區(District G)競賽資格，與來自東南亞各國家的優勝者進行 SPDC 競賽。如在 SPDC 亞太區(District G)競賽獲取優勝佳績，可獲得代表亞太分區(District G)前往美國參加總決賽之資格。如取得 SPDC 亞太區(District G)競賽資格以及總決賽資格，則須加入 ASME 會員方可參加競賽。

國內賽(台灣新竹) → 優勝 → District G 分區競賽(新加坡) → 優勝 → 總決賽(美國)

### 伍、競賽項目：

全競賽分為三個項目，各項競賽規範請參見附錄：

#### 1. Student Design Competition 設計競賽：

2012 年 SPDC 設計競賽題目為 Energy Relay 請依照題目設計出作品進行參賽。詳細規格請參照附錄一。

#### 2. Old Guard Oral Presentation Competition 演講競賽：

演講題目不限，機械相關即可，限制以個人參賽，並全程以英文演講。詳細資訊請參照附錄二。

### 3. Old Guard Technical Poster Competition 海報製作：

海報題目、內容不限，機械相關即可。詳細資訊請參照附錄三。

#### 陸、參賽資格：

國內大專院校全職在學學生，可混合組隊，在職進修學生及教師不受理報名。

#### 柒、參賽方法：

各隊伍(各人)可自行選擇欲報名參加之項目，並於國內賽之前完成作品，國內賽當日前往比賽地點進行競賽。Student Design Competition 設計競賽限制每組最多 4 人，Old Guard Oral Presentation Competition 演講競賽以個人為單位報名，演講以英文進行。競賽各項目的最高分隊伍(個人)將會頒發獎金、證書。

由於 SPDC 亞太區(District G)競賽為一國際性機械競賽，全競賽以英文進行。

#### 捌、競賽流程：

##### Student Design Competition 設計競賽：

競賽會場當天會有試跑區、準備區以及競賽區，各隊隊伍可在準備區調整作品，如欲試跑可至試跑區進行測試，試跑區內一切進行動作不算成績，當各隊隊伍於準備區、試跑區調整作品完畢，可至競賽區進行記分，競賽區計分三次，取三次最高者為最終成績。

##### Old Guard Oral Presentation Competition 演講競賽：

請參賽者自備隨身碟以及簡報檔，現場提供筆記型電腦、投影機。

##### Old Guard Technical Poster Competition 海報製作：

請參賽者自行輸出欲展示海報，現場提供海報擋版。

#### 玖、評分標準：

特商請美國機械工程師學會台灣分會遴選評審團，並按照美國機械工程師學會頒佈之評分標準進行評分。各項競賽的評分準則請見附錄。

#### 拾、競賽獎金：

##### 一、Student Design Competition 設計競賽：

第一名：15,000 元

第二名：8,000 元

佳作(依參賽隊伍數量而定)：3,000 元

##### 二、Old Guard Oral Presentation Competition 演講競賽：

第一名：5,000 元

第二名：2,000 元

##### 三、Old Guard Technical Poster Competition 海報製作：

第一名：3,000 元

佳作(依參賽隊伍數量而定):1,000 元

拾壹、競賽時間：

民國 101 年 3 月 11 日星期日。

(如有緣故必須調整競賽時間，主辦單位有權調整競賽時間)。

拾貳、競賽地點：

國家高速網路與計算中心

新竹市科學園區研發六路 7 號

(電子地圖：[http://www.nchc.org.tw/tw/about/traffic/google\\_map.php](http://www.nchc.org.tw/tw/about/traffic/google_map.php))

拾參、金額補助：

海報輸出費：每隊補助海報輸出費用 500 元。

當天統一訂購午餐，不需另外付費。

拾肆、報名辦法：

報名時間於民國 100 年 12 月 5 日起，至民國 101 年 2 月 20 日截止。

報名表請見附錄四。

保證金：每人 200 元整，比賽結束後，退還全額保證金 200 元。

報名時請使用郵局現金袋郵寄。內含：報名表、參賽成員學生證正反面影本、保證金

(現金袋內現金只接受鈔票，如有收據請妥善保管)

詳細填寫後寄至：

(30013) 新竹市清大郵局 2-264 號信箱

拾伍、聯絡資訊：

ASME 學生競賽(SPDC)國內賽 總召 蔡松翰 0963-017-205

[jtsai9833212@gmail.com](mailto:jtsai9833212@gmail.com)

ASME 學生競賽(SPDC)國內賽 副召 陳紀全 0935-183-170

[utunesl@gmail.com](mailto:utunesl@gmail.com)

拾陸、競賽網站：

相關資訊會公布在網站上，請密切注意。

請上 Facebook 搜尋：**2012 ASME 台灣國內賽**

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ASME 2012 Student Design Competition  
*Energy Relay*

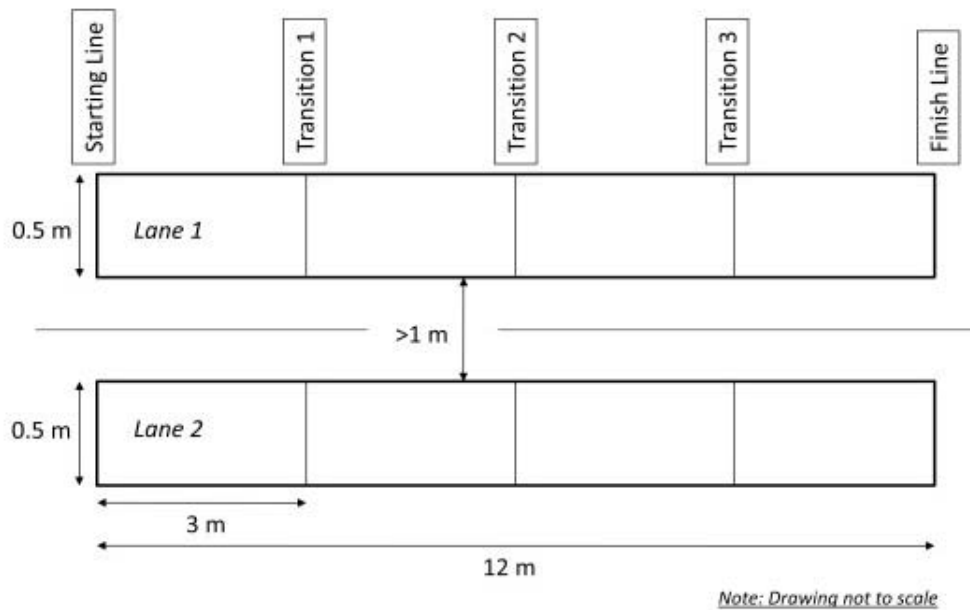
Providing energy to a world with a growing population and rising expectations is a challenge that engineers must embrace and solve. So many factors must be considered and balanced: cost, efficiency, resource availability, environmental impact, sustainability, and more. Many different potential solutions are being proposed and developed. While the winners have yet to be determined, it is safe to assume that the future will include a wide variety of solutions that together will power our planet.

Providing transportation energy is a major piece of the overall energy challenge, and is the focus of the 2012 Student Design Competition. Practicing engineers in transportation areas are developing a variety of technology options and looking to integrate these technologies. You must do the same for the competition described below.

Project Task: Design four self-propelled devices which can collectively complete a relay race in the shortest period of time. Each device must contain an on-board energy source and trigger the motion on the next device. The devices will compete on a course as shown below. Bonuses will be awarded for devices having different energy sources and for initiating subsequent devices.

Project Guidelines:

1. The track will be a straight path as shown in Figure 1. Surfaces will not be defined and may include hard floors, carpet and/or anything else that could be encountered at the venue. There are no barriers on the sides. The sides will be defined by tape.
2. Before each test run, one device will be placed with its leading edge on the starting line, with the subsequent devices located on transition lines 1-3.
3. Students will initiate the first device in the relay by toggling a clearly labeled on/off switch. Subsequent to this all devices must operate autonomously.
4. The motion of Devices 2-4 in the relay must be initiated by the prior device, after it has traversed its segment of the course.
5. Each of the four devices may be powered by a different type, or unique combination of, energy source(s). Note that devices using combustion, fossil fuels, or nuclear power sources, as well as live animals, are prohibited in this competition.
6. Each device, as it would be placed on the track, must fit in a box with internal dimensions measuring 100 mm by 100 mm by 200 mm. Each device must arrive at the contest venue in a separate box, satisfying the above dimensions, provided by the team.



**Figure 1: Track Layout.**

**Scoring:**

1. Teams will have a maximum of 3 minutes to position their devices on the competition surface.
2. At the end of the 3 minutes the judges will begin timing for the run whether teams are ready or not.
3. Judges will determine scoring based on vehicle positions at the end of the 120 second run time, teams must then pick up their devices.
4. Each relay team will complete two runs, one in each lane. All teams will complete their first run prior to any team completing its second run.
5. Though two teams will compete concurrently, scoring will be based solely on the provided formula for Total Score.
6. Teams must run both heats with the same four devices; teams may run the four devices in a different order for each heat.

**Scoring Formula:**

- Run Score = Total Number of Devices Initiated x 15 + Max(120 s – Trial Time, 0) + (Number of devices with different Energy Sources Initiated) x 50  
 where Trial Time is measured in seconds and recorded as the elapsed time between switch-based device initiation and when the final device crosses the finish line. To receive a trial time of less than 120 seconds, four devices must be initiated and the fourth device must cross the finish line in less than 120 seconds.

Total Score = Sum of Two Run Scores

- The final device must cross the finish line within the designated lane to earn a Time Trial score less than 120 seconds.

# Old Guard Oral Presentation Competition

## Rules and Procedures

Like all professionals, engineers must possess a well-developed ability to synthesize issues and communicate effectively to diverse audiences. Among the highlights of [ASME's Student Professional Development Conference \(SPDC\)](#) program is the Old Guard Oral Presentation Competition. This competition is designed to emphasize the value of an ability to deliver clear, concise and effective oral presentations, particularly pertaining to some sphere in which an engineer is or should be involved.

Each student presentation lasts fifteen minutes and is followed by a five minute "Question and Answer" (Q&A) period. First Place winners from each of the District Conferences are invited to compete at the Society level at the International Mechanical Engineering Congress & Exposition.

Each presentation in the Oral Presentation Competition must be delivered in English. The subject matter of each presentation must address a technical, economic or environmental aspect of engineering or other basic engineering theme, provided it pertains to some sphere in which an engineer is or should be involved. A major portion of a contestant's total score is based on the judges' evaluation of his/her relative capability to communicate orally, including evidence of a talent to respond effectively in the Q&A period.

A competitor may utilize any available resource but must realize that the presentation is to be an individual effort. Assistance in the use of visual aids is advisable (Powerpoint, etc.). Film clips, if used, may not exceed one-minute total duration (i.e. a maximum of one minute of each student presentation may be used for video). Film clips may not be accompanied by any recorded sound. Good practice and courtesy suggests credit be given during the presentation for any outside help related to the reported project. A written paper or manuscript is not required.

## Eligibility and Requirements

To be eligible to participate, each contestant must be a Student Member who:

- a. has not yet received an engineering degree\* and,
- b. has been selected by his/her Student Section or ME Department to participate; and,
- c. is a Student Member in good standing.

\* Student Members who complete the requirements for their baccalaureate engineering degree, or who actually receive that degree at the end of a term, semester, or quarter a short time before a scheduled conference may still participate. These Student Members, however, must not have completed their degree requirements before December 1 of the calendar year prior to the Conference.

At least two (2) weeks before the date of the District Conference, each participant's Student Section Advisor or his/her Student Section (or Department Head, if there is no Student Section) shall advise the Student Section

Advisor of the host institution and ASME Staff of the names of their contestants and titles of their presentation (ASME Staff can be reached at [oldguard@asme.org](mailto:oldguard@asme.org)).

## Competition Entry

The Old Guard Oral Presentation Competitions are held locally at ASME Student Professional Development Conferences (SPDCs). Students who wish to participate must:

- Visit the Student Professional Development Conferences website.
- Choose the location of the conference he/she plans to attend.
- Complete the appropriate entry form for that location.

Students entering the Old Guard Oral Competition may **not** enter the Old Guard Technical Poster Competition. There is **no restriction** on entering the Old Guard Technical Webpage Competition.

## Conduct of the Contest

Each presentation in the Old Guard Competition shall be made by one contestant. Any questions regarding procedure shall be resolved by the Student Section Advisor and District Leader before the Conference.

The Chair of the Host Student Section usually presides during the contest and ensures that there is adherence to the time schedule given in the printed program. The Presentation's duration is fifteen (15) minutes plus five (5) minutes for Q&A immediately thereafter. Any time remaining or exceeding the fifteen minutes must be added to or subtracted from the five minute discussion.

Questions may be asked by any attendee of the competition except those from the competitor's own educational institution. Each person posing a question to a speaker must stand, identify himself/herself and school, and then proceed with the question. The Host Student Section must appoint two timekeepers from two visiting student delegations. Timekeepers must be non-contestant Student Members. They are to be introduced by name and college at the beginning of each session and instructed to keep time as follows:

- At the end of twelve minutes, the first timekeeper will rise to signal to the speaker that there are three minutes remaining.
- After the speaker nods to acknowledge the signal, the timekeeper will sit down.
- At the end of fourteen minutes, the second timekeeper will rise to signal to the speaker that there is one minute remaining.
- After the speaker acknowledges the signal, the timekeeper will sit down.
- At the end of fifteen minutes, both timekeepers will rise together and remain standing until the speaker concludes the presentation.



- Both timekeepers will rise at the end of five minutes to terminate the discussion period.

## **Judging and Scoring Criteria**

Each contest is to be judged by the same individuals throughout, preferably ASME members of mature judgment, who are selected along with one or two alternates. Local ASME Sections and District Leaders will be pleased to cooperate in the search for judges. As an alternative, some Districts use one faculty member and one student from each represented school as judges, with the faculty and student not judging their own presenter(s).

The Presentations will be judged in four categories; Content, Organization, Delivery and Effectiveness, and Discussion.

### **Content**

To what extent is the subject of interest to a technical audience? Is credit given for source of material or contribution by others? How much knowledge of subject was exhibited? Is work independent and original? Is the subject technical or general in nature?

### **Organization**

Is there any novel approach to the subject? Is there sufficient background information provided in order to introduce the audience to the subject? Are the facts developed in logical and continuous sequence? Is there a definite conclusion, and was it adequately based on the facts or data presented?

### **Delivery and Effectiveness**

Are the words distinctly pronounced and was proper volume used to be heard by all? Is proper English used, and is the vocabulary sufficient? Is personal appearance appropriate? Are there any distracting mannerisms? Is the manner of delivery (conversation, memorized, read from manuscript) satisfactory? If visual aids are used, how effectively are they used? Is the presentation within the time limit of 15 minutes allowed?

### **Discussion**

- Is the presentation evoking spontaneous questions from the audience? Are the questions indicating the need for clarification of facts presented, or were they merely of the type seeking additional information? How readily and with what self-assurance did the speaker answer the questions? Are the answers indicating knowledge of the subject beyond that disclosed in the original presentation? Is the ability to think clearly demonstrated?

Judges are to use the Scoring Sheet provided (see [Appendix A](#)) as the basis for judging all the Student Professional Development Conferences. The Scoring Sheet has been developed for the convenience of the judges in evaluating the presentation in competition. Scoring Sheet samples should be sent to the judges for familiarity ahead of the contest. Scoring Sheets are not to be given to the presenters. Judges should be informed that they must agree to serve through the entire contest, be it one or two days.

Judges are encouraged to fill out the Feedback Sheet (see [Appendix B](#)) on each student's presentation and give them to the contestants at the conclusion of the presentations. The Feedback Sheet has been developed for the convenience of the judge to assist him/her in this process.

## District Awards and Recognition

Each Student Member that participates in the District competition will receive an ASME membership upgrade to Member, compliments of the Old Guard.

Judges at each conference are to select First, Second, Third and Fourth Place winners based on the criteria specified in the competition score sheet. A Fifth Place winner may be selected, at the judges' discretion. An additional award is available for "Best Technical Content." This prize may be given to one of the top four winners or any other presenter at a conference.

Student Conference (SPDC) Awards		Society Awards (Finals at IMECE)	
First	\$500.00 plus a trip to compete in the final competition at ASME's IMECE	First	\$2,000.00
Second	\$150.00	Second	\$1,500.00
Third	\$100.00	Third	\$1,000.00
Fourth	\$50.00	Fourth	\$500.00
Fifth			\$25.00
Technical			\$50.00

## Competition Finals

Each ASME District is entitled to select one (1) Old Guard Oral Presentation finalist at its Student Professional Development Conference (SPDC) to represent the District at the finals of the Old Guard Oral Presentation Competition. Finals take place at the International Mechanical Engineering Congress and Exposition (IMECE) in November. North American Districts choosing to have more than one Student Professional Development Conference in a given year are entitled to select a maximum of two (2) Oral Competition winners, but no more than one per conference.

No substantial changes from the presentation given at the District Student Professional Development Conference may be made for the finals at IMECE. Any substantial change of title or major revision of the presentation given at the District SPDC will result in disqualification and may result in loss of travel reimbursement.

The final competition at IMECE is judged by a panel of volunteers from within the ASME community, based on the same criteria as the District events. The top four presenters among the finalists are eligible for Society awards. The winners are also recognized at Society events and featured in various ASME publications and web sites.

Adopted by the Old Guard Committee

August 11, 2011

# Old Guard Technical Poster Competition

## Rules and Procedures

Engineers, like all professionals, must possess a well-developed ability to communicate. This poster competition, held at the local [District Student Conferences](#), is designed to emphasize the ability to deliver a visual presentation. Subject matter is to be related to some area in the field of mechanical engineering.

## Administration

The Old Guard Technical Poster Competition was developed and has been revised by the Student Sections Committee. The Old Guard Committee sponsors the competition and must approve all revisions.

## Competitors

To be eligible to participate, a competitor must be a Student Member of ASME who satisfies the criteria established for the Old Guard Oral Presentation Competition. Students entering the Old Guard Technical Poster Competition may not enter the Old Guard Oral Competition. There is no restriction on entering the Old Guard Technical Webpage Competition.

## Competition Entry

Students who wish to participate must complete the appropriate entry form and submit it to the host school of the conference their student section plans to attend.

- Visit the [ASME Student Professional Development Conferences \(SPDC\)](#) website.
- Choose the location of the SPDC your section plans to attend.
- Complete and submit the entry form for that location.
- Poster entrant must be in attendance at the SPDC where the poster is presented.

## Poster Presentation

Failure to abide by the following rules will disqualify the poster.

- Each poster may be no larger than 48 inches (122 cm) by 36 inches (91.4 cm) unfolded. Posters may be prepared using A4, A5 or 8½" by 11" paper.
- The poster must be able to stand free on a supporting table by means of one or more vertically hinged joints separating the poster into multiple panels, or by physical supports attached to the back of the poster that are not visible from the front of the poster.
- Except for fasteners (such as thumbtacks) all poster material must be flush with the board, not protruding more than 1/8 inch (3.2 mm). Posters can be prepared on A4, A5 or 8½" by 11" paper.
- There may be no mechanical or electrical devices attached to the poster.
- There may be no materials placed in front of, above, below, or to the side of the poster.
- All material must be accessible without having to lift or turn a page.
- Each entry may have only one author printed on the poster. However, ethical policies require credit (acknowledgements) to be given on the poster for any assistance by other students or advisors.
- The name and affiliation of the author must be in a prominent place.

## Judging

- The poster should be prepared so that it is easily understood in the absence of the author.
- Neither the author nor any other individuals may be present during the judging.
- Judging criteria are based solely on the content of the front of the poster.
- Each local competition is to be judged by at least three engineers, preferably ASME members.
- The conference Host Section is responsible for selecting the judges.

## Scoring Criteria

Click here for [Scoring Sheet for Technical Poster Competition](http://www.files.asme.org/asmeorg/Events/Contests/9416.pdf)  
<http://www.files.asme.org/asmeorg/Events/Contests/9416.pdf>

## Prizes

- The ASME Old Guard Committee will provide a first place prize of \$200 for each SPCD competition.
- The Old Guard pays for a one time membership upgrade for the First Place winners of the competition, upon request.

2012 年美國機械工程師學會(ASME)學生競賽(SPDC)國內賽報名表

一、參加項目：

<input type="checkbox"/> Student Design Competition 設計競賽
<input type="checkbox"/> Old Guard Oral Presentation Competition 演講競賽
<input type="checkbox"/> Old Guard Technical Poster Competition 海報製作
※附註：設計競賽組隊報名人數至多四人，演講競賽為單人性質，報名人數至多一人。

二、參賽名單：

隊長	姓名		連絡電話	
	學校/科系		E-mail	
隊員	姓名		連絡電話	
	學校/科系		E-mail	
隊員	姓名		連絡電話	
	學校/科系		E-mail	
隊員	姓名		連絡電話	
	學校/科系		E-mail	
※附註：如報名人數僅只一人，填寫隊長欄位即可。				

三、注意事項：

1. 隨報名表請附上參賽成員學生證正反面影本以及保證金(每人 200 元整)。
2. 每參加一項競賽請填寫一份報名表。
3. 報名日期：100 年 12 月 5 日起，至 101 年 2 月 20 日截止。
4. 詳細填寫後寄至： (30013) 新竹市清大郵局 2-264 號信箱
5. 聯絡人：
ASME 學生競賽(SPDC)國內賽 總召 蔡松翰 0963-017-205 <a href="mailto:jtsai9833212@gmail.com">jtsai9833212@gmail.com</a>
ASME 學生競賽(SPDC)國內賽 副召 陳紀全 0935-183-170 <a href="mailto:utunes1@gmail.com">utunes1@gmail.com</a>