

2020 FRANCIS RHODES MONTGOMERY DESIGN COMPETITION RESULTS

Despite the COVID-19 pandemic restrictions the ASME 2020 Francis Rhodes Montgomery Design Competition (FRMDC) was held May 8, 2020 using virtual conferencing, for this event Zoom video conferencing was used. Since 1987 when the FRMDC began, presentations, demonstrations, and judging of Department of Mechanical Engineering (DME), College of Engineering (COE), University of Hawaii at Manoa, Capstone Senior Design Course projects had no social restrictions. Now the requirements of the State of Hawaii with its social distancing had to be followed, no meeting and presentation in a University of Hawaii at Manoa auditorium and no close contact poster and hardware Q&A sessions. New procedures were needed. ASME Hawaii Section is thankful that Professor A. Zachary Trimble took charge and led the effort for a successful 2020 FRMDC. Dr. Trimble is an instructor for the Senior Design ME 481/ME 482 course.

Dr. Trimble, DME and ASME agreed that the virtual version be held essentially the same as Pre-COVID-19 days. Nine Senior Design Course project teams competed. The competition time was shortened from 11 a.m. to 5:00 p.m., since it is virtual and since there will not really be any "hardware" to show. The FRMDC Zoom format:

1) Presentation: This was essentially the same as always - just remote. Four judges were Mechanical Engineers from Hawaiian Electric Company Power Supply Engineering Department, the area which Francis R. Montgomery once led. Each team had a set time to present via DME Zoom account. Students have been using Zoom for their courses and familiar with it.

2) Poster Presentation: Each team prepared a print ready poster in pdf format. The poster was pre-distributed to the judges. After all the formal presentations were completed, each team reconnected with the judges remotely for ten minutes for the judges to ask questions about the poster. This format mimics the live version of the FRMDC as much as possible.

3) Hardware demonstration: This part was cancelled altogether due to the following reasoning. Some teams will have limited hardware, and some teams will have none. Teams that figured out how to make some hardware in the current situation will look more impressive. However, we need to remember some projects are conducive to working from home. Some are not. For instance a team that is making small 3D printed parts or small arduino electronics can continue to make some hardware progress. A team making a formula race car or other large project cannot make that hardware at their home. Additionally, some students have access to a shop or garage to continue working on hardware from home. Some students live in an apartment and cannot. Per the current UH COVID guidelines, we cannot expect students to build any hardware since as a public school cannot guarantee their ability to do so from home. Thus, under the equal opportunity guidelines at the university we need to eliminate hardware demonstration via video or other means.

After completing the first FRMDC Zoom presentation, Dr. Trimble said, "Under the circumstances, I think the format worked out okay. Certainly operable hardware is more impressive, but the students adapted."

Using the scoring rubric and other scoring guidelines developed by Dr. Trimble and the DME, the judges ranked the first, second and third place teams, as follows: First and \$500 went to Team Hokulele, second and \$400 to Team Makani, and third and \$300 to Rainbow Warriors Racing (RWR). The team's project descriptions and abstracts are as follows.

FIRST PLACE, Team Hokulele

Team Hokulele designed and developed a two-stage high powered rocket capable of reaching 30,000 feet, housing multiple payloads, and safe recovery on multiple parachutes. The rocket was designed with four subsystems: propulsion, structure, payload and recovery. The purpose of this project is to provide students the opportunity to collaborate and

1st place Team Hokulele

From left to right:

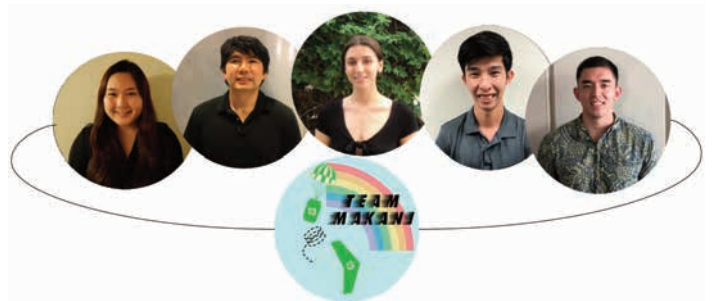
Adam James Macalalag (Project Manager), Brandon Lucas (Structure Lead), Matthew Nakamura (Chief Engineer), Jason Borgida (Propulsion and Payload Lead), Eric Takahashi (Financial Manager).



2nd place Team Makani

From left to right:

Kayli Chun, Evan Tengan, Haley DeTure, Johnny Pham, Matthew Hiyakumoto.



3rd Place Rainbow Warriors Racing

From left to right:

Back row- Yongwei Chen, Rhys Matsumoto, Takuya Wise, Kelan Thom, Tanner Atiburcio. Front row- Khanh Nguyen, Tone Munevongsa, Jr., Freddy Elley, Janno Burce, Jared Ambrosio, Silvija Djelic, Skyler Kimura, Zhipeng Liu, Kenny Uehara, Sam Jung.





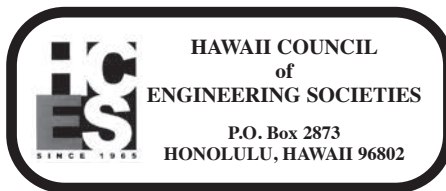
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Additions and/or corrections to the Wiliki mailing list should indicate the proper society, institution or association. Corrections to email addresses should be submitted to your society coordinator.

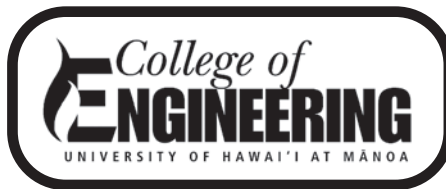


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email: kstreet@ascehawaiiyymf.org

EXECUTIVE COMMITTEE MEETING

Last held: May 5, 2020
Next meeting: June 2, 2020

ASCE HAWAII SECTION DINNER MEETING Program: T.B.D

The continued health and safety of our membership is our top priority and we will continue to monitor the COVID-19 pandemic. Future ASCE Hawaii events, including our section dinner meetings, are still temporarily on hold. We will keep you informed via e-blasts and/or notices posted on our website at ascehawaii.org when they will be scheduled. Please continue to stay safe, watch out for each other, especially our kupuna, and continue to be vigilant about best health practices.

Speakers: T.B.A

Date: T.B.A
Location: T.B.A.
Time: T.B.A
Menu: T.B.A
Cost: T.B.D



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COMMITTEE POSITIONS

ASCE Hawaii is looking for volunteers to fill the following committee positions: One (1) Student Practitioner Advisor. If you are interested or have questions on any of these positions, please contact President Jason Kage, jkage@ascehawaii.org.

MEMBERSHIP

If you haven't already done so, please renew your ASCE membership. You can renew your membership at www.asce.org.

ASCE JOB LISTINGS

The following job listings are currently posted on the ASCE Hawaii Section website:

- **AECOM** (Civil Engineer II)
- **Belt Collins Hawaii** (Civil Engineer I, II, III, Civil Engineer P.E., Senior Project Manager)
- **Booz Allen Hamilton** (Senior Civil Engineer and Wastewater Specialist)
- **City and County of Honolulu** (Civil Engineer III, IV, V, Mechanical Engineer V, & Electrical Engineer V)
- **G70** (Civil Designer, Civil Engineer, Civil Project Manager, Construction Manager)
- **HDR** (Senior Civil Engineers, Senior Federal Project Manager, Project Manager – Transportation Group, & Water/Wastewater Engineer)
- **Hirata & Associates** (Geotechnical/Civil Engineer – Project Engineer)
- **Jacobs** (Civil Engineer)
- **Kennedy/Jenks Consultants** (Project Manager, Staff Engineer for Honolulu Office and Staff Engineer for Hawaii Office)
- **Nagamine Okawa Engineers Inc.** (Structural Engineer)
- **PGH Wong** (Change and Claims Manager, Change and Claims Specialist, Civil/Building Inspector, Office Engineer, & Scheduler)
- **SSFm** (Civil Engineer V, Structural Engineer IV)
- **US Army Corp of Engineers** (USACOE) (Interdisciplinary Project Manager, GS-12)

For further information, please visit <http://www.ascehawaii.org/job-listings.html>.

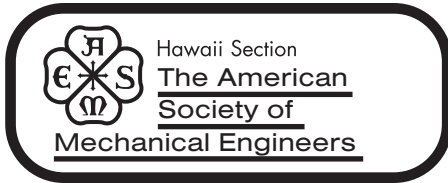


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YMF General Meeting

The next YMF general meeting is TBD. Please be sure to check our website and social media channels for the most updated information. If you are interested in attending and learning more about the various professional, social and service opportunities available through YMF, please contact YMF at yfm.hawaii@gmail.com.



www.asme-hi.com

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NEXT ASME-HAWAII GENERAL MEMBERSHIP MEETING

Date: Date yet to be determined depending on COVID-19 status and State Social Distancing proclamation relaxation and depending if remote-virtual meeting conducted.

Time: usually from 5:30 pm to 6:45 pm

Place: Pre-COVID-19: at Johnson Controls, 550 Paiea Street (map and parking instructions found on the Hawaii Section website)

Agenda: A copy of the agenda will be on the Section website.

As usual, all members, students and guests are invited and encouraged to attend our meetings. Please contact Chairman Froilan Garma for directions and for more information.

MATHCOUNTS WEEK CELEBRATED MAY 11 THROUGH MAY 15

MATHCOUNTS at its core is a community united by a love of problem solving, even when meeting in person for competitions is not possible as happened this March due to COVID-19 pandemic. That's why May 11 through May 15 was MATHCOUNTS Week powered by AoPS, a virtual celebration for the entire MATHCOUNTS community. Exciting online math activities were hosted all that week at Pi Time (3:14 pm ET).

Events included the "Open MATHCOUNTS State Competition" where participants took the just-for-fun, online version of the 2020 State Competition, hosted on the AoPS website. Art of Problem Solving (AoPS) Online offers educational resources for motivated students in grades 5-12. Students who were not able to attend the in-person state competition would be able to get a virtual experience, and students who took the 2020 State Competition were given the opportunity to try for a higher score.

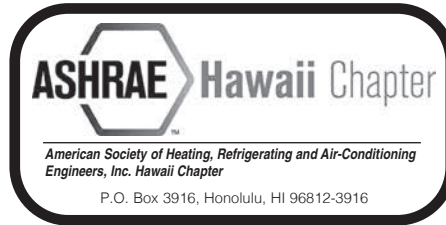
ASME HAWAII GROUP LEADERSHIP TEAM 2020-2021

The April 30, 2020 deadline passed for volunteer nominations submittals. The current Group Leadership Team (GLT) will maintain their Section offices for the next ASME fiscal year, July 1 to the following June 30. The GLT includes the Section Chairman, Vice-Chairman, Treasurer, Secretary, Group Page Administrator, and two Members. The list of confirmed GLT members (officers) must be sent to ASME by June 30 each year. The GLT positions and major duties can be found at the ASME-HI website: "<http://asme-hi.com/bylaws-GOG2015.pdf>".

2020 FRANCIS RHODES MONTGOMERY DESIGN COMPETITION REVIEW

The just completed 2020 FRMDC will be

critiqued during future Section meetings in case future virtual conferencing competitions are necessary. The comments and recommendations of instructors, students and judges will be solicited in hopes of making any improvements.



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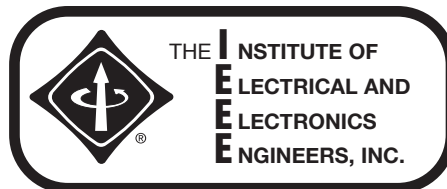
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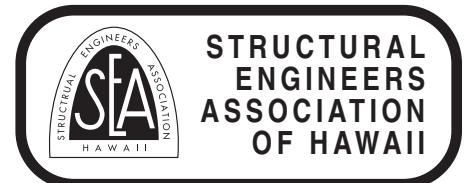


IEEE Hawaii Section

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**Deadline for
Wiliki
is June 15th**



PO BOX 3348, HONOLULU, HI 96801

Web Page URL <http://www.seaoh.org>

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Past President	Kevin Nakamoto
	<i>pukapig@yahoo.com</i>

Upcoming Events

- In-person seminars have been cancelled during the stay-at-home order period. For online continuing education opportunities see seaoh.org and email announcements.

SEAOH Annual Convention

- The 2020 SEAHO Convention and Japan trip have been postponed due to Covid-19. Board members will be polling the membership to gauge interest in holding an in-person mini-convention later in the year. If you are not contacted and wish to provide input, please email any Board member.

NCSEA SE3 Survey

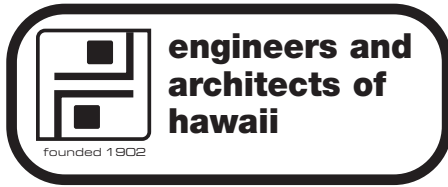
- The NCSEA SE3 Committee is currently administering its third biennial nationwide survey of structural engineers. Survey topics include career development, compensation, work flexibility, and overall engagement. For more information, see www.SE3committee.com and email announcements.

Next Meeting on June 3, 2020 via web conference. For information, contact SEAHO President Danny Fujioka.



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EAH Friday meetings have been suspended due to the Coronavirus restrictions. Hopefully, we can re-start our EAH meetings in June. Updates will be posted at eahawaii.org.

Tit Mun Chun 1930 -2020



Sad news that one of EAH's Emeritus Members has passed on recently. Tit Mun Chun was our Treasurer for several years and a member since 1989. He was one of the top leaders in the State Department of Transportation Highways Division and worked on most of our

Interstate systems in the 60's and 70's. After he retired from DOT he was President of M&E Pacific. He was a regular member of EAH until just a few year ago when he was no longer able to attend. Funeral Notices are pending. Tit Mun tells his own story in a 7-minute video from a 2011 EAH meeting. Contact eahawaii@gmail.com if you want the link to the video.

Two new videos have been posted to the EAH YouTube Channel <https://www.youtube.com/user/eahawaii1902>.

Restoring Lehua Island Seabird Sanctuary in Hawaii

Lehua Island, which is 285 acres in size and raises up to 700 ft above sea level, will be an important seabird sanctuary in the future, because with sea level raise due to global warming, many of Hawaii's and the Pacific's atolls, such as Midway which only has an elevation of 6 ft, will be underwater. Patrick Chee, the Small Animal Control Planner with the University of Hawaii, talks about his successful project to restore the seabird sanctuary on Lehua Island in Hawaii by exterminating the rat population. Update: Rats have not been seen on cameras on Lehua Island since December of 2018. An eradication confirmation effort will be made in the future and if no rats are found the rat eradication on Lehua Island will be declared a success.

The Fate of the USS Saginaw 1870

Hans Van Tilburg discoverer of the shipwreck of USS Saginaw shipwreck on Ocean Island on Kure Atoll in 1870 tells the story the USS Saginaw from its construction at Mare Island, its travels across the Pacific, its wreck, how the crew saved themselves and its discovery by the NOAA team in 2003. Hans Van Tilburg PhD NOAA Office of National Marine Sanctuaries Tells the stories of CMD Montgomery Sicard, LT. John Gunnel Talbot, William Halford, Peter Francis, James Muir, John Andrews



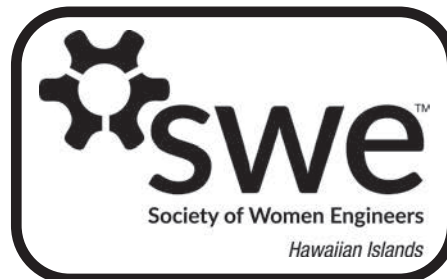
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2020 SAME Honolulu Scholarship Program

Each year, SAME Honolulu offers several four- and one-year scholarships to deserving high school seniors and college students who will be or are currently enrolled at a university with an accredited engineering or architecture program. For more information on the 2020 scholarship program categories, eligibility, and scholarship application submittal requirements, download the 2020 SAME Honolulu Scholarship Application at www.samehonolulu.org. **Application deadline is July 3, 2020(postmarked)**. For all inquiries, email scholarship@samehonolulu.org.



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 Facebook: www.facebook.com/swe.hawaiianislands

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 The mission of the Society of Women Engineers is to empower women to achieve full potential in careers as engineers and leaders, expand the image of the engineering and technology as a positive force in improving the quality of life, and demonstrate the value of diversity and inclusion.



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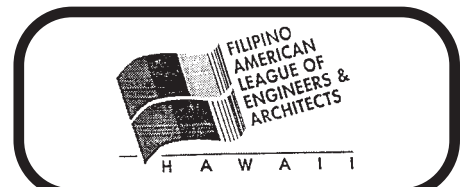
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2020 Results, from Page 1

compete in an intercollegiate aerospace engineering competition and to explore experimental high-powered rocket systems and payloads.

SECOND PLACE, Team Makani

The mission of Team Makani is to design a CanSat, or a small aerospace package to perform a technical and navigational challenge. Consisting of a container and enclosed glider, this CanSat will deploy from a rocket, release a glider which shall fly in a spiral for one minute, collect environmental and state-of-health data, as well as provide live video feed to the ground, before returning safely to the ground.

THIRD PLACE, Rainbow Warrior Racing

The Rainbow Warrior Racing (RWR) team consistently competes at the Formula SAE competition. The competition simulates student teams hired to design and build a small prototype Formula 1 style race car to be mass produced for non-professional, weekend race enthusiasts. The car is evaluated against other teams from around the world for its overall performance, cost and potential as a production item. RWR aims to develop UH Manoa's first electric FSAE vehicle and compete in the 2021 competition.

4. Wayfinder

Team Wayfinder is developing a subterranean autonomous vehicle system (SubTAVS) capable of autonomously mapping an unknown cave environment and exploring for artifacts, while demonstrating terrain- and environment-adaptive mobility. The SubTAVS will consist of an aerial and ground integrated modular design with perception, mapping, and navigation capabilities. Our goal will be to map the surroundings, navigate an underground environment setting, and locate an artifact within these environments.

5. Kanaloa

Team Kanaloa's mission is to make advancements in unmanned maritime systems. Our current project involves a deployment system for a remotely operated vehicle to launch from our existing surface vehicle, with the hopes to make underwater exploration safer and easier. The deployment system can be controlled from shore and provide a live camera feed for marine biology research or monitoring underwater systems and structures, while minimizing the crew and facilities needed.

6. Bowbot

Team BowBot has designed an Autonomous Electric Vehicle System (AEVS) to test the

viability of an AEVS as a delivery system and to contribute to research in this field. As a new Vertically Integrated Project, this project provides opportunities to develop skills in this industry. Some of the existing framework and components from a previous prototype were incorporated into this iteration and the project has been divided into the following subsystems: structure, drivetrain, electrical, software.

7. NaviKai

Team Navikai is a multidisciplinary group of engineering students from the University of Hawaii at Manoa. The team is building an autonomous underwater vehicle (AUV) with multiple capabilities. The goal of the team is to develop an AUV that will be useful in disaster/dangerous scenarios in order to be able to save lives and replace humans in a dangerous environment. The team will participate in the 2020 RoboSub competition which will serve as a platform to test the vehicle's capabilities.

8. UHDT

University of Hawaii Drone Technology's (UHDT) mission statement is to explore the functionalities of an Unmanned Aerial Vehicle (UAV) such as Search-And-Rescue (SAR) operations. In the past, the team would attend the annual AUVSI SUAS competition using a fixed-wing commercial off the shelf airframe to complete certain tasks like waypoint navigation, obstacle detection and avoidance, payload delivery, geotagging, image recognition, and autonomous flight.

9. IIAPS

The Integrated Industrial Automation of a Pneumatic System project aims to develop a modular test bench for use by pneumatic-based manufacturers of all scales. A modular approach was used to ensure that a variety of designs could be adequately vetted without needing to shut down production. Thus, all parties interested in altering current methods of production and/or developing preventative maintenance systems could capitalize on increased production rather than overpaying for marginal benefits.

Details of the nine projects can be found on the ASME Hawaii website at www.asme-hi.com/frmdc.html.

Judges were engineers from Hawaiian Electric Company (HECO) due to Francis R. Montgomery's affiliation, retiring as Vice President of Engineering in 1979. In addition, HECO engineers are very willing and able to volunteer. After the competition, Dr. Trimble said, "I would like to thank the judges for sticking

in there all day with us." It was a long day on Zoom listening, concentrating, asking questions, and finally the scoring.

Acknowledgements:

ASME Hawaii would like to thank Professor A. Zachary Trimble and the DME COE UHM for leading and conducting the 2020 Francis Rhodes Montgomery Design Competition, and for helping to perpetuate this mechanical engineering annual event. Thanks to all the Senior Design Course participants who worked hard and professionally in presenting their mechanical engineering projects. Finally, thanks to the Hawaiian Electric Company judges Dagan DeWeese, Steven Kehm, Cassie Oda, and Simeon Powell who persevered through the long hours of presentations, providing the professional Q&A, and professionally scoring the presentations.



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