FAKULTI: FAKULTI KEJURUTERAAN ELEKTRIK

TAJUK: PERMOHONAN PELANJUTAN PEMBETULAN TESIS

BUTIRAN PELAJAR	KETERANGAN PELAJAR	ULASAN DAN TINDAKAN FAKULTI	KELULUSAN
NAMA : SOON CHUN MEIN **NO K/P @ ISID : 890219125631** **NO MATRIK : ME133020** **PROGRAM : SARJANA KEJURUTERAAN (ELEKTRIK)** **JENIS PENGAJIAN : PENYELIDIKAN** **BENTUK PENDAFTARAN : SEPENUH MASA** **PENYELIA : PROF. MADYA DR. AHMAD ZURI BIN SHA'AMERI** **PENYELIA BERSAMA : EN. ZULFAKAR BIN ASPAR** **BIL SEM: 6 / 8 (SEMESTER 2, SESI 2015/2016)** **STATUS : PEPERIKSAAN** **PEMERIKSA LUAR: PROF. MADYA DR. YANG SOO SIANG (UMS)** **PEMERIKSA DALAM: IR. DR. KUMERESAN A.DANAPALASINGAM** **PENGERUSI: PROF. MADYA DR. NORLAILI BINTI MAT SAFRI** **MUKASURAT : 1/1**	1.1 Pelajar telah menjalani peperiksaan lisan dan perlu menghantar tesis bagi tujuan pemeriksaan semula tesis. 1.2 Kronologi pelajar adalah seperti berikut : **Bil / Tarikh / Perkara** 1 / 30/08/2016 / Pelajar menghantar tesis bagi tujuan peperiksaan lisan. 2 / 07/02/2017 / Peperiksaan lisan dijalankan. Pelajar mendapat keputusan c2 (6 bulan). 3 / 09/02/2017 / Surat pemakluman tempoh menghantar semula tesis dikeluarkan kepada pelajar. 4 / 08/08/2017 / Tarikh akhir pelajar perlu menghantar pembetulan tesis ke fakulti. 5 / 26/07/2017 / Pelajar menghantar surat permohonan untuk melanjutkan penghantaran pembetulan tesis pada 08/09/17. 1.3 Pelajar memohon masa tambahan masa selama 1 bulan atas sebab yang berikut : i. Tambahan maklumat dalam skop kajian yang dijalankan seperti yang dicadangkan oleh Pemeriksa Luar di dalam laporan pemeriksa. ii. Perlu lebih masa untuk memperbaiki tesis di bahagian Pengurusan Bahan Rujukan dan Susunan Analisa Data. iii. Memastikan format serta bahasa tesis yang digunakan mencapai piawai yang ditetapkan oleh UTM.	1.1 MesyuaratJawatankuasa Peperiksaan Fakulti yang telah diadakan pada 07 Ogos 2017 bersetuju memajukan permohonan pelanjutan pembetulan tesis pelajar ke Mesyuarat JAPSU. 1.2 Lampiran dokumen yang berkaitan: i. Surat permohonan perlanjutan tarikh pembetulan tesis yang disokong oleh penyelia. ii. Salinan butiran perancangan pembetulan tesis.	Dimajukan Disokong / Tidak disokong PROF. DR. JOHARI HALIM SHAH BIN OSMAN Dekan Fakulti Kejuruteraan Elektrik Universiti Teknologi Malaysia 81310 UTM Johor Bahru Johor Darul Takzim **Dekan / TD (Akademik) & Cop Rasmi** Tarikh : 30/8/2017 Setuju / Tidak Setuju (Ulasan) _____ _____ _____ **Pengerusi Mesyuarat Jawatankuasa Akademik Pengajian Siswazah Universiti (JAPSU) & Cop Rasmi** Tarikh : _____

Fakulti Kejuruteraan Elektrik
Universiti Teknologi Malaysia
81310 Johor Bahru
Johor, Malaysia

Tel: +(6)07-5533333 Faks: +(6)07-5566272 http://www.utm.my http://www.fke.utm.my
Tel: +(6)07-5557236 Faks: +(6)07-5587849

RUJUKAN KAMI :

RUJUKAN TUAN : UTM.J.23.16/14.14/1/6/2 Jld.11 (139)

20 Ogos 2017

Dekan,
Sekolah Pengajian Siswazah, Blok F54,
Universiti Teknologi Malaysia,
Johor Bahru.

*(u.p. : **Prof. Madya Dr. Nazri Bin Ali**)*

Saudara,

PENCALONAN SEMULA PENGERUSI DAN PERLANJUTAN NOTIS TAMAT TEMPOH BAGI PELAJAR DOKTOR FALSAFAH KEJURUTERAAN (ELEKTRIK) DAN SARJANA FALSAFAH FAKULTI KEJURUTERAAN ELEKTRIK

Saya dengan hormatnya merujuk kepada perkara di atas.

2. Adalah dimaklumkan bahawa Jawatankuasa Akademik, Fakulti Kejuruteraan Elektrik pada 15 Ogos 2017 ingin memohon perlanjutan notis tamat tempoh pelajar yang telah tamat tempoh pada 28 Jun 2017 dan 20 Julai 2017 sehingga akhir semester (2017/2018-2) serta pelantikan semula Pengerusi dan Pengerusi Gantian baharu. Maklumat pelajar adalah seperti di bawah:

1.	**Nama**	**: Muhammad Syazani bin Nazarudin**
	Semester	**: 4/8**
	Penyelia	**: Prof. Madya Dr Azli bin Yahya**
	Pengerusi	**: Prof. Dr Mohamed Khalil bin Hj Mohd Hani**
	Pengerusi Gantian	**: Prof. Dr Razali bin Ismail**
	Pemeriksa Dalam	**: Dr. Mohd Junaidi bin Abdul Aziz**
	Pemeriksa Dalam Gantian	**: Prof. Madya Dr. Awang bin Jusoh**
	Pemeriksa Luar	**: Prof. Ir. Dr. Tiong Sieh Kiong (UNITEN)**
	Pemeriksa Luar Gantian	**: Prof. Madya Dr. Zuwairie bin Ibrahim (UMP)**
2.	**Nama**	**: Adila Syaidatul bte Azman**
	Semester	**: 4/8**
	Penyelia	**: Prof. Dr. Razali bin Ismail**
	Pengerusi	**: Prof. Dr. Mohamed Khalil bin Hj Mohd Hani**
	Pengerusi Gantian	**: Prof. Dr. Abu Khari bin A'ain**
	Pemeriksa Dalam	**: Prof. Madya Dr. Mohd Haniff bin Ibrahim**
	Pemeriksa Dalam Gantian	**: Prof. Madya Dr. Norazan bin Mohd Kassim**
	Pemeriksa Luar	**: Prof. Dr. Ibrahim bin Ahmad (UNITEN)**
	Pemeriksa Luar Gantian	**: Prof. Dr. Uda bin Hashim (UniMAP)**
3.	**Nama**	**: Yeap Han Chien**
	Semester	**: 4/6**
	Penyelia	**: Prof. Dr. Mohamed Khalil bin Hj Mohd Hani**
	Pengerusi	**: Prof. Dr. Abu Khari bin A'ain**
	Pengerusi Gantian	**: Prof. Dr. Razali bin Ismail**
	Pemeriksa Dalam	**: Prof. Madya Dr. Muhammad Nadzir Marsono**
	Pemeriksa Dalam Gantian	**: Prof. Madya Dr. Rosbi bin Mamat**
	Pemeriksa Luar	**: Prof. Dr. Mamun Ibne Reaz (UKM)**
	Pemeriksa Luar Gantian	**: Prof. Dr. R.Badlishah Ahmad (UNISZA)**

Pengurus Akademik Pasca Siswazah

Fakulti Kejuruteraan Elektrik

Universiti Teknologi Malaysia

81310 Skudai, Johor Bahru

23 JULAI 2017

Tuan,

RAYUAN PERMOHONAN MELANJUTKAN TEMPOH PEMBETULAN TESIS

Merujuk kepada perkara di atas saya, SOON CHUN MEIN (ME133020) ingin membuat rayuan berkenaan tempoh pembetulan tesis (Tajuk) saya yang telah dijadualkan sebelum atau pada 8 Ogos 2017.

2. Untuk makluman pihak tuan, salah satu keperluan untuk menambah baik gred kerja saya seperti yang dicadangkan oleh panel pemeriksa Ir. Dr. YANG SOO SIANG adalah analsa dan implementasi pengawal pesawat udara tanpa pemandu atas mikropengawal atau Field Programmable Gate Array (FPGA).

3. Oleh yang demikian, banyak bacaan dan kefahaman diperlukan untuk tambahan skop kerja tersebut justeru memakan banyak masa saya untuk melengkapkan kerja tersebut.

4. Saya amat memerlukan tempoh masa lanjutan untuk saya memperbaiki tesis terutamanya di bahagian pengurusan bahan rujukan, dan susunan analisa data. Saya juga perlu memastikan format serta bahasa mencapai piawai yang ditetap oleh UTM. Butir-butir perancangan pembetulan tesis saya dikepilkan sekali dengan surat rayuan ini.

Saya amat berbesar hati sekiranya pihak Tuan dapat mempertimbangkan permohonan saya untuk melanjutkan tempoh penghantaran tesis selama **sebulan dari 8 Ogos 2017 hingga 8 September 2017**. Kerjasama daripada pihak tuan amat saya hargai.

Sekian, terima kasih.

Yang benar.

.....

Soon Chun Mein

Pelajar Master

014-9110719

ahmein_g7@hotmail.com

Disokong oleh,

.....

Prof. Madya Dr. Ahmad Zuri Sha'ameri

Penyelia

zuri@fke.utm.my

Prof. Madya Dr. Ahmad Zuri b. Sha'ameri
Ketua Makmal Pemprosesan Isyarat
Fakulti Kejuruteraan Elektrik
Universiti Teknologi Malaysia
81310 UTM Skudai
Johor Darul Takzim

List of Correction	Mark	8 August 2017 – 8 September 2017			
		Week 1	Week 2	Week 3	Week 4
Abstract					
1. Rewrite both English and Malay abstract based on latest work	Not Done				x
Chapter 1 (Introduction)					
1. Rewrite chapter 1 to state the motivation of the research is generally focus on the aspect of control theory and hardware implementation	Done				
2. Change research objective to focus on the controller design with the consideration of both control theory and hardware implementation.	Done				
Chapter 2 (Literature Review)					
1. Previous writing on $\mathcal{H}_\infty$ control theory is moved to separate chapter (Chapter 4), additional review on controller design related to hardware is added in literature review	Not Done	x	x	x	
2. Review on similar work of flight control design of small scale UAV	Not Done		x	x	
Chapter 3 (Methodology)					
1. Include research flow on hardware implementation 2. Add in citation as well as detail explanation on how the design parameter is selected based on relevant theory, related work and collected data analysis	Done				
Chapter 4 (Theory)					
1. UAV plant mathematical model	Done				
2. $\mathcal{H}_\infty$ control theory	Done				
Chapter 5 (Analysis, Result and Discussion)					
1. Rewrite Chapter 5 which highlight and discuss finding from work a. Plant analysis b. Control weighting function c. Closed loop sensitivity and complementary sensitivity d. Open loop, closed loop and desired model step response e. 3DOF and 6DOF nonlinear simulation f. Hardware in loop (HIL) simulation	Part a – e (done) Par f (not done)	x	x		
Chapter 6 (Conclusion and Future Work)					
1. Rewrite chapter 6	Not Done			x	

Panels comments	Solution
Title of the Thesis	
1. The title of the thesis is too general. It would be more appropriate to include keywords related to comparative studies of LPV and fixed point $\mathcal{H}\infty$ methods for the purpose of flight control of a specific type of UAV	New proposed title: $\mathcal{H}_\infty$ Longitudinal Attitude Control System Design for a Small Scale UAV
Abstract	
1. Bahasa Malaysia version: Needs to be revised. Inaccurate translation especially with respect to specific mathematical/engineering terminologies	Rewrite both English and Malay abstract based on latest work
Chapter 1 (Introduction)	
1. Motivation related to research work is not convincing and contains many unexplained assumptions 2. Research objectives are not structured with reference to aim 3. Problem statements not clear 4. Major revision on Chapter 1 is recommended	1. Rewrite chapter 1 to state the motivation of the research is generally focus on the aspect of control theory and hardware implementation 2. Change research objective to focus on the controller design with the consideration of both control theory and hardware implementation. 3. Removed LPV $\mathcal{H}_\infty$ control from work
Chapter 2 (Literature review)	
1. Generally not focused on subject matter (i.e. LPV Controllers and $\mathcal{H}\infty$ controllers) 2. Too many irrelevant and basic textbook materials Major revision of this chapter is recommended	1. Previous writing on $\mathcal{H}_\infty$ control theory is moved to separate chapter (Chapter 4), additional review on controller design related to hardware is added in literature review
Chapter 3 (Research Methodology)	
1. Many assumptions made and parameters suggested in this chapter need to be adequately explained or justified 2. Many parameters and data are obtained from reference (work of others or textbook materials). Material from the candidate's own work is not clearly defined or explained. 3. Equation 3.24 as referred to in page 71 cannot be found. Major revision of this chapter is recommended	1. Include research flow on hardware implementation 2. Add in citation on how the design parameter is selected based on relevant theory, related work and collected data analysis 3. Move part of the theory in separated chapter (Chapter 4)
Chapter 4 (Analysis/Result and Discussion)	**Chapter 5**
1. Chapter 4 Result and Discussion contains material related to the comments required for section 4.5 and 4.6 2. Result shown (Figs 4.1 – 4.4) are described but not analyzed objectively. Meaningful figures to substantiate discussions need to be shown or calculated for context in discussions. For example percentage deviation, error, peak overshoot etc. 3. Result shown (Figs 4.1 – 4.4) are for time response not time respond. 4. The last paragraph in Section 4.2 needs to be further clarified 5. Stability analysis needs to be included.	1) Chapter 4 change to Chapter 5 (Chapter 4 is for theory) 2) Rewrite Chapter 5 which highlight and discuss finding in following sequence a. Plant analysis b. Control weighting function c. Closed loop sensitivity and complementary sensitivity d. Open loop, closed loop and desired model step response e. 3DOF and 6DOF nonlinear simulation f. Hardware in loop (HIL) simulation

Chapter 5 (Conclusion and Future Work)	Chapter 6 (Conclusion and Future Work)
1. The candidate needs to clarify further regarding the second paragraph. The third paragraph is insignificant. Uncertainties/noise introduced for simulation is none in effect (i.e. wind factor was assumed nil in the simulation study. The candidate has also clearly stated in Section 5.2 that the research is incomplete.	Rewrite chapter 6
Strength of the thesis	
1. Comparative studies of different controller performance for the purpose of UAV flight control. 2. Highlights of problems related to controllers in UAV	
Weakness of the thesis	
1. Lack of novelty of innovation. Would be advisable for the candidate to complement simulation outcomes with measured real time data from experiments on the UAV.	1. Hardware implementation
Significance of the study	
1. Significant contribution to the main body of knowledge if revisions recommended is performed satisfactorily	
Recommendation for the award	
1. The thesis can be improved. The candidate need to focus on significant areas of improvements suggested and be allowed adequate time to continue his work to achieve the required level.	