



Course Syllabus

Name of Institution Walailak University
School/Institute/college International College of Dentistry **Department** Oral Bioscience
Program Master of Science Program in Dentistry (International Program)

General Information

1. Course Code and Course Title

DST61-601 Advanced Oral Biology

2. Number of Credits

3 (3-0-6)

3. Curriculum and Type of Subjects

This is the required major courses of Master of Science Program in Dentistry (International Program).

4. Course Coordinators and Lecturers

Course coordinator Dr. Panomwat Amornphimoltham

Lecturers Prof. Dr. Sittichai Koontongkaew

Prof. Dr. Jeerasak Nopakun

Prof. Jintakorn Kuvatanasuchati

Assoc. Prof. Dr. Cholticha Amornchat

Prof. Dr. Noppakun Wongsawan

Assoc. Prof. Dr. Chidchanok Leethanakul (Prince of Songkla University)

Asst. Prof. Dr. Yosananda Chantravekin (Bangkokthonburi University)

5. Trimester / Year of Study

2nd trimester /1st year of study

6. Pre-requisites (if any)

.....

7. Co-requisites (if any)

.....

8. Venue of Study

Lecture and Practice: Monday to Friday 9.00-12.00 pm Smart Classroom: 1

9. Date of the Latest Revision

...29/08/19.....

10. Updated details of the course

.....

.....

.....

.....

Note: this course syllabus template is based on dimensions designed by The United Kingdom Professionals framework (UKPSF)

Design and plan learning activities and/or programs of study (A1, UKPSF)

Design and plan learning activities learning activities and/or programs of study. (TQF 3, teaching and learning process and activities, etc.)

1. Philosophy, Vision, and Mission of Walailak University

Vision

To be an institution of good governance, a source of knowledge for critical problems facing the nation, to unfailingly address community needs, and to strive for international recognition for excellence.

The university has 4 major commitments as follows:

1. To provide high level training for students, based on world standards, consistent with socio-economic development of the South of Thailand and Thailand as a whole;
2. To conduct research in order to develop new knowledge that can be of benefit to national progress, and help enhance international competitiveness of Thailand;
3. To provide and share expertise and technical services to organizations, both private and government sectors, including research and training and technological transfers in areas that help develop the region and country;

-
4. To act as a center for the conservation and restoration of art and culture.

2. Walailak University Graduate Attributes

Walailak University aims to discover, seek, maintain and disseminate knowledge and academic excellence for the progress of society. At the heart of its obligation is to develop individuals who are both professionally-competent and morally upright.

Philosophy, Vision, and Mission of the Program

Our Master of Science Program in Dentistry aims to foster students to achieve high degree of professional competence in dental specialists interfaced with research focus. Graduates are expected to be able to independently construct dental science knowledge and achieve academic research impact in the international level. We encourage students to collaborate and integrate oral health science to other disciplines while maintaining personal moral and professional ethics.

Program Graduate Attributes

- 1) Achieve professional excellence and apply current and emerging science and technology to construct scientific knowledge in advanced dental specialties. Graduate roles as educational and research leader in the field are recognized both national and international stages.

- 2) Integrate scientific research methods with the dental specialties to service and improve community dental health.

- 3) Develop research for academic excellence which benefit to national science and technology development. The students are encouraged to publish in the well-recognized international peer review platform and patent the discoveries.

In addition to attributes specific to program the 21st skills are also featured in the program, including skills in communication, collaboration, critical thinking and creative thinking.

3. Course Objectives (Use the Bloom's Taxonomy as a guide to structure your course objectives) (Put in the black dots in the curriculum mapping in the TQF 2)

At the end of the trimester or semester, students should be able to:

- 3.1 Familiar with major topics of comprehensive molecular and cellular oral biology.
- 3.2 Understand theoretical frameworks and current research problems in oral biology. Develop self-learning and seeking new knowledge in the field.
- 3.3 Acquire critical skills to systematically analyze and integrate knowledge of both theories and clinical applications of common oral diseases and conditions.
- 3.4 Apply information technology into analyzing, evaluating and screening the peer-review research literature in the oral biology field.
- 3.5 Respect others' opinions and accepting the differences in individual both in academia and the profession.

3.6 Exhibit responsibility in self and group.

Teach and/or support learning (A2, UKPSF)

Identify teaching methods/approaches to support learning

1. Course Description

A survey of the major topics of up-to-date molecular and cellular oral biology. Comprehensive and current topics in various aspect of oral biology relating to etiology of dental caries, periodontal diseases, oral facial pain, oral infections (oral biofilm, oral microbiome, HIV), oral squamous cell carcinomas, mechanisms of host-pathogen interactions, craniofacial development, oral diseases progression which includes the scientific approached to efficient prevention and treatment of oral disease.

2. Credit Hours/Trimester or Semester

Lecture and other teaching activities (hours)			Total hours	Laboratory/ Field Study/ Internship (hours)	Self-study (hours)
Lecture (hours)	Active learning for Formative assessment				
	small class teaching (hours)	Other teaching activities (hours)			
12	24	0	36	0	No less than 72

* small class teaching or other learning activities to support learning. These activities are additional to large class lecture.

Teaching methods: You can choose more than 1 method by put ✓ in .

- | | |
|--|--|
| <input checked="" type="checkbox"/> Lecture-based | <input checked="" type="checkbox"/> Discussion-based |
| <input type="checkbox"/> Demonstration-based | <input type="checkbox"/> Project-based |
| <input type="checkbox"/> Experimental-based | <input type="checkbox"/> Laboratory |
| <input type="checkbox"/> Autonomous Learning | <input type="checkbox"/> Inquiry-based |
| <input type="checkbox"/> Field Study | |
| <input type="checkbox"/> Group Study / Research | |
| <input checked="" type="checkbox"/> OthersSeminar-based..... | |

Learning Approaches: You can choose more than 1 method by put ✓ in .

- Community-based Learning

-
- Flipped Classroom
 - Brain-based Learning
 - Experiential Learning
 - Problem-based Learning
 - Research-based Learning
 - Case-based Learning
 - Others

Teaching Plan and Evaluation

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management <small>(K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)</small>	Materials and Resources <small>(K1, UKPSF: The subject materials)</small>	Assignments/ Guided reading	Evaluation/ Criteria <small>(K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)</small>
1/1 (3 hours) Oct 21, 2019	Course orientation/ Introduction Lecturer Panomwat	1. Course introduction 2. TQF3	1, 7,10	-Orientation -Q&A	TQF3	none	none
2/1 (3 hours) Oct 22, 2019	Bone biology 1. Bone as connective tissue 1.1 Origin of bone 1.2 Bone cells 1.3 Bone matrix 2. Physiology and changes of bone 3. Bone substitutes 4. Clinical application Lecturer Yosananda	1. Define the bone and components of the bone. 2. Define the physiology and changes of bone. 3. Define each type of bone substitute and its advantages/disadvantages. 4. Apply the basic knowledge of bone biology in the clinical dentistry application.	1,3,4,5,6 ,7,10	-Interactive lecture -Practice/activities -Q&A	-Hardin J, Bertoni G, Kleinsmith LJ. Becker's world of the cell: technology update, 8th edition. -Garg AK. Bone biology, harvesting, grafting for dental implants: rationale and clinical applications. -Garant PR. Oral cells and tissues. -Chantravekin Y. Bone biology. <i>Thai J Oral Maxillofac Surg</i> 2007;21:44-57. (in Thai)	Reading assignment and practice after class	-Formative assessment after class (80% passed criteria) -Summative evaluation: Short answer questions (passing criteria 80%)

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
3/1 (3 hours) Oct 24, 2019	Stem cells in dentistry 1. Origin of stem cells a. Pluripotent stem cells b. Adult stem cells 2. Intraoral tissues-derived stem cells 3. Stem cell signaling pathway a. Wnt/ β -Catenin b. Notch 4. Clinical application Lecturer Panomwat	1. Define stem cells. 2. Identify types of stem cells particularly intraoral tissue-derived stem cells. 3. Summarize the key components of stem cell signaling pathways. 4. Apply the basic knowledge of stem cells in the clinical dentistry application.	1,3,4,5,6 ,7,8,10	-Reading assignment -Socratic discussion -Interactive lecture -Q&A	- Tomasello L, Mauceri R, Coppola A, Pitrone M, Pizzo G, Campisi G, et al. Mesenchymal stem cells derived from inflamed dental pulpal and gingival tissue: A potential application for bone formation. Stem Cell Res Ther. 2017;8(1):1–15. -Gronthos S, Brahim J, Li W, Fisher LW, Cherman N, Boyde A, et al. Stem Cell Properties of. J Dent Res. 2002;81:531-535. -Sharpe PT. Dental mesenchymal stem cells. Dev. 2016;143(13):2273–80.	-Read the assignment -Come prepared with questions about topic and the assignments. -Actively participate in the class discussion.	-Formative assessment: group discussion participation. -Summative assessment Final exam: short essay or short answer questions (passing criteria 80%):

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
4/1 (3 hours) Oct 25, 2019	Biology of tooth movement Lecturer 1. Theories of tooth movement a. Bone bending theory b. Piezoelectric theory c. Biphasic theory 2. Tissues response to orthodontic force 3. Factors affects orthodontic tooth movement 4. Modalities to accelerate tooth movement a. Surgical approaches b. Biological approaches c. Physical approaches 5. Clinical complications in orthodontic tooth movement Lecturer Chidchanok	1. Explain concepts around the theory of tooth movement. 2. Identify factors that play the role in orthodontic tooth movement. 3. Summarize the tissue biological response to orthodontic force. 4. Apply the essential knowledge of tissue reaction that could be used to accelerate and improve orthodontic treatment outcome.	1,3,4,5,6,7,10	-Reading assignment -Socratic discussion -Interactive lecture -Q&A	-Biological mechanisms of tooth movement, 2015: Chapter 1-3, Evaluation of biological concepts. Ze'ev Davidovitch and Vinod Krishnan, page 3-52. -Contemporary Orthodontics 6 th ed 2019: Chapter 8, The Biological Basis of Orthodontic Therapy. William R. Profit, page 248-275. Evaluation of biological concepts. Ze'ev Davidovitch. -Yodthong N, Charoemratrote C, Leethanakul C. Factors related to alveolar bone thickness during upper incisor retraction. Angle Orthod 2013, May 83(3):394-410.	-Read the assignment -Come prepared with questions about topics that are unfamiliar or confusing -Participate in the class discussion	-Formative assessment after class (80% passed criteria) -Summative evaluation: Short answer questions (passing criteria 80%)

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
					<p>-Leethanakul C, Kanokkulchai S, Pongpanich S, LEEPONG N, Charoemratrote C. Interseptal bone reduction on the rate of canine reduction. Angle Orthod 2014, Sep 84(5):839-845.</p> <p>-Leethanakul C, Suamphan S, Jitpukdeebodindra S, Thongudomporn U, Charoemratrote C. Vibratory stimulation increase interleukin-1 beta secretion during orthodontic tooth movement. Angle Orthos 2016. Jan 86(1): 74-80.</p> <p>-Puttaravutti P, Wongsuwanlert M, Charoemratrote C, Lindauer SJ, Leethanakul C. Effect of</p>		

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management <small>(K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)</small>	Materials and Resources <small>(K1, UKPSF: The subject materials)</small>	Assignments/ Guided reading	Evaluation/ Criteria <small>(K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)</small>
					<p>incisal loading during orthodontic treatment in adults: A randomized control trial. Angle Orthod. 2018. Jan. 88(1):35-44.</p> <p>-Benjakul S, Jitpukdeebodintra S, Leethanakul C. Effects of low magnitude high frequency mechanical vibration combine with compressive force on human periodontal ligament cells in vitro. Eur. J. Orthod 2018 July;40(4):356-363.</p> <p>-Leethanakul C, Phunsuntorn P, Pravitharagul A. Vibratory stimulus and accelerated tooth movement: A critical appraisal JWFO 2018 Sep; 7(3): 106-112.</p>		

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
5/2 (3 hours) Oct 28, 2019	Oral epithelium biology 1. Cell adhesions a. Cell-cell junctions b. Cell-matrix junctions 2. Adhesion proteins 3. Cell junction structures and signaling networks a. Rho-GTPase b. Integrin 4. Clinical applications Lecturer Panomwat	1. Broad understand of cell adhesion with other cells and extracellular matrix 2. Understand different adhesion proteins and forms of cell junctions. 3. Summarize the key components of cell-junction signaling pathways. 4. Apply the basic knowledge of cell-junction in the clinical dentistry application.	1,3,4,5,6 ,7,8,10	-Reading assignment -Socratic discussion -Interactive lecture -Q&A	-Oral Mucosa in Health and Disease: A Concise Handbook , Bergmeier , 2018 Springer: Chapter 2: Cell-Cell Interactions in the Oral Mucosa: Tight Junctions and Gap Junctions;Hong Wan, Hanan Gadmor, and Louise Brown, page 19-30 and Chapter 3: Anchoring Junctions in the Oral Mucosa: Adherens Junctions and Desmosomes; Hong Wan, Hanan Gadmor, and Louise Brown, page 31-53. -Garcia MA, Nelson WJ, Chavez N. Cell-Cell Junctions Organize Structural. Cold Spring Harb Perspect Biol 2017;10(4):1–28.	-Kawamura M, Yamamoto T, Yamashiro K, Kochi S, Yoshihara-Hirata C, Ideguchi H, et al. Induction of migration of periodontal ligament cells by selective regulation of integrin subunits. J Cell Mol Med. 2019;23(2):1211–23. -Larjava H, Koivisto L, Häkkinen L, Heino J. Epithelial integrins with special reference to oral epithelia. J Dent Res. 2011;90(12):1367–76. Guided - Read the assigned articles for critique in small group discussion - Come prepare to ask questions	-Formative assessment: group discussion participation. -Summative assessment Final exam: short essay or short answer questions (passing criteria 80%):

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
					-Samiei M, Ahmadian E, Eftekhari A, Eghbal MA, Rezaie F, Vinken M, et al. Cell junctions and oral health. EXCLI J. 2019 Jun 7;18:317-330.		
6/2 (3 hours) Oct 29, 2019	Oral biofilm 1. Microbial ecology 2. Colonization by oral bacteria 3. Surface structures and molecules involved in adhesion Lecturer Jintakorn	1. Define biofilm	1,3,4,5,6,7,8,10	-Interactive lecture -small group discussion -Q&A	-จินตกร คุ้มพัฒนสุชาติ จุฬาลงกรณ์มหาวิทยาลัย ช่องปาก และที่มาของโรคฟันผุ โรคปริทันต์ และโรคในช่องปาก พิมพ์ครั้งที่ 3, บทที่ 4 หน้า 123-126: 2549 -Richard J. Lamont, Robert A. Burne, Mariln S. Lantz, Donald J. Leblanc	Reading assignment and in-class discussion	- Summative evaluation: Short answer questions (passing criteria 80%)

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
					Oral Microbiology and immunology Chapter 5, p89,91,93: 2006, ASM Press.		
7/2 (3 hours) Oct 30, 2019	Dental caries update Lecturer Sittichai	1.	1,3,4,5,6,7,8,10	-Interactive lecture -small group discussion -Q&A		Reading assignment and in-class discussion	-Formative assessment after class (80% passed criteria) - Summative evaluation: Short answer questions (passing criteria 80%)
8/2 (3 hours) Oct 31, 2019	Oral ecology 1. The microflora of oral cavity a. Colonization of oral bacteria. b. Diversity. c. The predominating types of species. d. The function of saliva and oral microflora. 2. Oral ecology	1. Define oral microbiome. 2. Define oral ecology and ecosystem. 3. Apply the basic knowledge of oral ecology in the clinical dentistry application (caries, periodontitis, systemic diseases due to oral microorganisms).	1,3,4,5,6,7,8,10	-Interactive lecture -small group discussion -Q&A	-Lakshman Samaranayake. Essential Microbiology for Dentistry. 5 th edition 2018: Part 5, Oral microbiology. page 265-315. -Taylor & Francis Microbial Ecology in Health and Disease Vol 12, 2000. -Kilian, M, Chapple, ILC, Hannig, M et al. <i>The oral microbiome – an update for</i>	Reading topics -Saliva as the diagnostic tool. -Oral microbiome project. -Systemic diseases caused by oral infection.	-Formative assessment after class (80% passed criteria) - Summative evaluation: Short answer questions (passing criteria 80%)

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
	<p>a. Oral ecosystem (tooth enamel, tongue, gingivital surface, saliva).</p> <p>b. Barrier effect (colonization resistance effect).</p> <p>c. Ecological balance and diseases.</p> <p>3. Clinical application</p> <p>Lecturer Cholticha</p>				<p><i>oral healthcare professionals</i>. British Dental Journal, 2016 221 (10). pp. 657-666. ISSN 0007-0610</p> <p>-Philip D.M. Role of the Oral Microflora in Health, Microbial Ecology in Health and Disease, 2000 12:3, 130-137, DOI: 10.1080/089106000750051800--Wade W.G. The oral microbiome in health and disease. Pharmacol Res. 2013 Mar;69(1):137-43. doi: 10.1016/j.phrs.2012.11.006. Epub 2012 Nov 28.</p>		
9/3 (3 hours) Nov 3, 2019	<p>Oral mucosal immunology</p> <p>1. Quick review on immunology</p> <p>a. Innate immune system</p> <p>b. Acquired immune system</p> <p>2. Oral mucosal immunity</p>	<p>1. Explain basic concept of immunology</p> <p>2. Indicate the immunology responses in oral microenvironment.</p>	1,3,4,5,6,7,10	<p>-Reading assignment</p> <p>-Socratic discussion</p> <p>-Interactive lecture</p> <p>-Q&A</p>	<p>-Sompayrac, L. (2019). <i>How the immune system works, 6th Ed.</i> Malden, Mass: Blackwell Pub. whole book.</p>	<p>Menezes-Garcia Z, Duque R, Arifa N, Fagundes CT, Souza DG. Mechanisms Underlying Chemotherapy-Associated Mucositis: The Role of</p>	<p>-Formative assessment: group discussion participation.</p> <p>-Summative assessment Final exam: short essay or</p>

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
	3. Toll-liked receptor signaling pathway 4. Clinical application Lecturer Panomwat	3. Explore the signaling pathway involved in oral immune response. 4. Associate the significance of oral immunity to oral health.			-Ana Valentich M, Analia Cafaro T, Marcelo Serra H. Oral Cavity-Associated Immune System: What is New? <i>Curr Immunol Rev.</i> 2011;7(3):253–63. -Moutsopoulos NM, Konkel JE. Tissue-Specific Immunity at the Oral Mucosal Barrier. <i>Trends Immunol [Internet].</i> 2018 [cited 2019 Aug 15];39(4):276–87.	Inflammatory Mediators and Potential Therapeutic Targets. <i>EMJ EUROPEAN MEDICAL JOURNAL</i> 2018; (December):82–91. Guided - Read the assigned articles for critique in small group discussion - Come prepare to ask questions	short answer questions (passing criteria 80%).
10/3 (3 hours) Nov 4, 2019	Fluoride update 1. Fluoride metabolism 2. Mechanism of action of fluoride a. inhibiting tooth demineralization b. enhancing remineralization	1. Define mechanism of action of fluoride. 2. Apply the basic knowledge of fluoride in the clinical dentistry application.	1,3,4,5,6,7,10	-Reading assignment -Interactive lecture -In-class small group discussion --Q&A	-Fluoride metabolism. 2015 : Chapter 4, Fluorine: Chemistry, Analysis, Function and Effects, Preedy VR editor. Buzalaf CP, Leite AL, Buzalaf MA. Sao Paulo: Royal Society of Chemistry, page 54-72.	Green,R., Lanphear,B, Hornung,R., et al. Association between maternal fluoride exposure during pregnancy and IQ scores in offspring in Canada. <i>JAMA pediatr.</i>	-Formative assessment after class (80% passed criteria) - Summative evaluation: Short answer questions (passing criteria 80%)

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
	<p>c. inhibiting bacterial metabolism</p> <p>d. interferes with bacterial adherence to the teeth</p> <p>3. Open discussion on selected topics related to fluoride benefit.</p> <p>Lecturer Jeerasak</p>				<p>-Koontongkaew, S. (2009) Dental Caries. (pp. 274-313) Bangkok, Thailand: Igroup Press. (in thai)</p> <p>-Utispan, K., Koontongkaew, S., & Upaphong,V. (2019) Scientific basis of dental caries prevention. (pp. 230-287, 584-591) Bangkok, Thailand: Igroup Press. (in thai)</p> <p>- Whelton,H.P., Spencer,A.J., Do,L.G., & Rugg-Gunn,A.J. Fluoride revolution and dental caries: Evolution of policies for global use. Journal Dental Research July 8, 2019</p>	<p>doi:10.1001/jamapediatrics.2019.1729.</p> <p>- Dalal M, Clark M, Quinonez RB. Pediatric oral health: Fluoride use recommendations. https://www.contemporarypediatrics.com/pediatrics/pediatric-oral-health-fluoride-use-recommendations</p> <p>-Loskill P., Zeitz C, Grandthyll S., et al. Reduced adhesion of oral bacteria on hydroxyapatite by fluoride treatment. Langmuir. 2013;29(18):5528-5533.</p> <p>-Ducharme J. Is fluoride in drinking water safe? A new study reignites a long-</p>	

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
						standing debate. Published: August, 2019. https://time.com/5656476/is-fluoride-in-water-safe/	
11/3 (3 hours) Nov 5, 2019	Orofacial pain Lecturer Noppakun		1,3,4,5,6,7,10			-Reading assignment to prepare for class discussion	-Class participation -Summative evaluation: Short answer questions (passing criteria 80%)
12/3 (3 hours) Nov 6, 2019	Molecular biology of oral cancer Lecturer 1. Genetic aberration in oral cancer. 2. Signaling pathway a. EGFR/PIK3CA/AKT-mTOR pathway 3. HPV and oral cancer 4. Clinical application Lecturer Panomwat	1. Understand genetic change contribute to oral cancer 2. Understand essential signaling pathway in oral cancer. 3. Understand key role of HPV in oral cancer. 4*. Apply molecular targeting concept to cancer treatment and prevention.	1,3,4,5,6,7,8,10	-Reading assignment -Socratic discussion -Interactive lecture -Q&A	-Amornphimoltham P, Roth SJ, Idekar T and Gutkind JS. Targeting the mTOR Signaling Circuitry in Head and Neck Cancer, (2017) In <i>Squamous cell Carcinoma: Molecular Therapeutic Targets</i> , Warnakulasuriya S and Khan Z (Ed.) (Springer) ISBN: 978-94-024-1083-9; p 163-182. - Molinolo AA, Amornphimoltham P, Squarize	-Amornphimoltham P, Roth SJ, Idekar T and Gutkind JS. Targeting the mTOR Signaling Circuitry in Head and Neck Cancer, (2017) In <i>Squamous cell Carcinoma: Molecular Therapeutic Targets</i> , Warnakulasuriya S and Khan Z (Ed.) (Springer) ISBN: 978-94-024-1083-9; p 163-182.	-Formative assessment: group discussion participation. -Summative assessment Final exam: short essay or short answer questions (passing criteria 80%).

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
					<p>CH, Castilho RM, Patel V, Gutkind JS. Dysregulated molecular networks in head and neck carcinogenesis. <i>Oral Oncol.</i> 2009 Apr-May;45(4-5):324-34.</p> <p>- Amornphimoltham P, Patel V, Leelahavanichkul K, Abraham RT, Gutkind JS. A Retro-inhibition Approach Reveals that the Tumor Cells are the Primary Target for Rapamycin in Head and Neck Squamous Cell Carcinomas. <i>Cancer Res</i>, 68: 1144-1153, 2008.</p> <p>- Amornphimoltham P, Leelahavanichkul K, Molinolo AA, Patel V and Gutkind JS. Inhibition of mTOR by</p>	<p>- Amornphimoltham P, Patel V, Leelahavanichkul K, Abraham RT, Gutkind JS. A Retro-inhibition Approach Reveals that the Tumor Cells are the Primary Target for Rapamycin in Head and Neck Squamous Cell Carcinomas. <i>Cancer Res</i>, 68: 1144-1153, 2008.</p> <p>-Reading assignment to prepare for class discussion</p>	

Session No./ Week No. (Hours) Date	Topics Lecturer/Instructor	Learning Objectives (Students are able to...)	The 21 st Century Skills	Teaching Methods/ Activities/Class management (K3, UKPSF: How students learn, both generally and within their subject/ disciplinary area)	Materials and Resources (K1, UKPSF: The subject materials)	Assignments/ Guided reading	Evaluation/ Criteria (K2, UKPSF: Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic program)
					Rapamycin is sufficient to Promote the Regression of Carcinogen-induced Skin Tumor Lesions, <i>Clin Cancer Res.</i> 2008 Dec 15;14(24):8094-101		

As mentioned above, generic skills on the 21st skills are emphasized across curricular. Details are as follows:

1. Literacy
2. Numeracy
3. Reasoning
4. Problem Solving
5. Critical Thinking
6. Collaboration
7. Communication
8. Computing
9. Career and Life skills
10. Cross-cultural Skills

Textbook (The subject material (K1, UKPSF))

1. Recommended Textbooks

Bone Biology

-Hardin J, Bertoni G, Kleinsmith LJ. Becker's world of the cell: technology update, 8th edition.

-Garg AK. Bone biology, harvesting, grafting for dental implants: rationale and clinical applications.

-Garant PR. Oral cells and tissues.

Oral epithelium biology

-Oral Mucosa in Health and Disease: A Concise Handbook , [Bergmeier](#), 2018 Springer: Chapter 2: Cell-Cell Interactions in the Oral Mucosa: Tight Junctions and Gap Junctions; Hong Wan, Hanan Gadmor, and Louise Brown, page 19-30 and Chapter 3: Anchoring Junctions in the Oral Mucosa: Adherens Junctions and Desmosomes; Hong Wan, Hanan Gadmor, and Louise Brown, page 31-53.

Oral biofilm

-จินตกร คุ้มมนสุชาติ จุลชีววิทยาช่องปาก และที่มาของโรคฟันผุ โรคปริทันต์ และโรคในช่องปาก พิมพ์ครั้งที่ 3, บทที่ 4 หน้า 123-126: 2549

-Richard J. Lamont, Robert A. Burne, Mariln S. Lantz, Donald J. Leblanc

Oral Microbiology and immunology Chapter 5, p89,91,93: 2006, ASM Press.

Oral ecology

-Lakshman Samaranayake. Essential Microbiology for Dentistry. 5th edition 2018: Part 5, Oral microbiology. page 265-315.

-Taylor & Francis Microbial Ecology in Health and Disease Vol 12, 2000.

Oral mucosal immunology

-Sompayrac, L. (2019). *How the immune system works*, 6th Ed. Malden, Mass: Blackwell Pub. whole book.

Fluoride update

-Fluoride metabolism. 2015: Chapter 4, Fluorine: Chemistry, Analysis, Function and Effects, Preedy VR editor. Buzalaf CP, Leite AL, Buzalaf MA. Sao Paulo: Royal Society of Chemistry, page 54-72.

Oral Cancer

-Amorphimoltham P, Roth SJ, Idekar T and Gutkind JS. Targeting the mTOR Signaling Circuitry in Head and Neck Cancer, (2017) In *Squamous cell Carcinoma: Molecular Therapeutic Targets*, Warnakulasuriya S and Khan Z (Ed.) (Springer) ISBN: 978-94-024-1083-9; p 163-182.

2. Scholarly articles (There must always be journal articles as additional resources.)

Stem cells in dentistry

- Tomasello L, Mauceri R, Coppola A, Pitrone M, Pizzo G, Campisi G, et al. Mesenchymal stem cells derived from inflamed dental pulpal and gingival tissue: A potential application for bone formation. *Stem Cell Res Ther.* 2017;8(1):1–15.

- Gronthos S, Brahim J, Li W, Fisher LW, Cherman N, Boyde A, et al. Stem Cell Properties of. *J Dent Res.* 2002;81:531-535.

-Sharpe PT. Dental mesenchymal stem cells. *Dev.* 2016;143(13):2273–80.

Bone Biology

Chantravekin Y. Bone biology. *Thai J Oral Maxillofac Surg* 2007;21:44-57. (in Thai)

Biology of tooth movement

-Biological mechanisms of tooth movement, 2015: Chapter 1-3, Evaluation of biological concepts. Ze'ev Davidovitch and Vinod Krishnan, page 3-52.

-Contemporary Orthodontics 6th ed 2019: Chapter 8, The Biological Basis of Orthodontic Therapy. William R. Profit, page 248-275. Evaluation of biological concepts. Ze'ev Davidovitch.

-Yodthong N, Charoemratrote C, Leethanakul C. Factors related to alveolar bone thickness during upper incisor retraction. *Angle Orthod* 2013, May 83(3):394-410.

-Leethanakul C, Kanokkulchai S, Pongpanich S, Leepong N, Charoemratrote C. Interseptal bone reduction on the rate of canine reduction. *Angle Orthod* 2014, Sep 84(5):839-845.

-Leethanakul C, Suamphan S, Jitpukdeebodintra S, Thongudomporn U, Charoemratrote C. Vibratory stimulation increase interleukin-1 beta secretion during orthodontic tooth movement. *Angle Orthos* 2016. Jan 86(1): 74-80.

-Puttaravuttiporn P, Wongsuwanlert M, Charoemratrote C, Lindauer SJ, Leethanakul C. Effect of incisal loading during orthodontic treatment in adults: A randomized control trial. *Angle Orthod.* 2018. Jan. 88(1):35-44.

-Benjakul S, Jitpukdeebodintra S, Leethanakul C. Effects of low magnitude high frequency mechanical vibration combine with compressive force on human periodontal ligament cells in vitro. *Eur. J. Orthod* 2018 July;40(4):356-363.

-Leethanakul C, Phunsuntorn P, Pravitharangul A. Vibratory stimulus and accelerated tooth movement: A critical appraisal *JWFO* 2018 Sep; 7(3): 106-112.

Oral epithelium biology

-Garcia MA, Nelson WJ, Chavez N. Cell-Cell Junctions Organize Structural. *Cold Spring Harb Perspect Biol* 2017;10(4):1–28.

-Samiei M, Ahmadian E, Eftekhari A, Eghbal MA, Rezaie F, Vinken M, et al. Cell junctions and oral health. *EXCLI J.* 2019 Jun 7;18:317-330.

Oral ecology

-Kilian, M, Chapple, ILC, Hannig, M et al. *The oral microbiome – an update for oral healthcare professionals.* British Dental Journal, 2016 221 (10). pp. 657-666. ISSN 0007-0610

-
- Philip D.M. Role of the Oral Microflora in Health, Microbial Ecology in Health and Disease, 2000 12:3, 130-137, DOI: [10.1080/089106000750051800](https://doi.org/10.1080/089106000750051800)--Wade W.G. The oral microbiome in health and disease. *Pharmacol Res.* 2013 Mar;69(1):137-43. doi: 10.1016/j.phrs.2012.11.006. Epub 2012 Nov 28.

Oral mucosal immunology

- Ana Valentich M, Analia Cafaro T, Marcelo Serra H. Oral Cavity-Associated Immune System: What is New? *Curr Immunol Rev.* 2011;7(3):253–63.
- Moutsopoulos NM, Konkell JE. Tissue-Specific Immunity at the Oral Mucosal Barrier. *Trends Immunol [Internet].* 2018 [cited 2019 Aug 15];39(4):276–87.

Fluoride update

- Koontongkaew, S. (2009) Dental Caries. (pp. 274-313) Bangkok, Thailand: Igroup Press. (in thai)
- Utispan, K., Koontongkaew, S., & Upaphong,V. (2019) Scientific basis of dental caries prevention. (pp. 230-287, 584-591) Bangkok, Thailand: Igroup Press. (in thai)
- Whelton,H.P., Spencer,A.J., Do,L.G., & Rugg-Gunn,A.J. Fluoride revolution and dental caries: Evolution of policies for global use. *Journal Dental Research* July 8, 2019

Oral Cancer

- Molinolo AA, Amornphimoltham P, Squarize CH, Castilho RM, Patel V, Gutkind JS. Dysregulated molecular networks in head and neck carcinogenesis. *Oral Oncol.* 2009 Apr-May;45(4-5):324-34.
- Amornphimoltham P, Patel V, Leelahavanichkul K, Abraham RT, Gutkind JS. A Retro-inhibition Approach Reveals that the Tumor Cells are the Primary Target for Rapamycin in Head and Neck Squamous Cell Carcinomas. *Cancer Res*, **68**: 1144-1153, 2008.
- Amornphimoltham P, Leelahavanichkul K, Molinolo AA, Patel V and Gutkind JS. Inhibition of mTOR by Rapamycin is sufficient to Promote the Regression of Carcinogen-induced Skin Tumor Lesions, *Clin Cancer Res.* 2008 Dec 15;14(24):8094-101

Develop effective learning environments and approaches to student support and guidance (A4, UKPSF)

1. Consultation hours per week for individual students

Lecturing Team	Lecturer	Office Number	Phone Number	Email, LINE, Facebook, etc.	Consultation Time*
Course-coordinator, Lecturer	Dr. Panomwat Amornphimoltham	19 th floor SM Tower	086-367-6222	pa79wa@gmail.com	Office hours and by appointment
Lecturer	Prof. Dr. Sittichai Koontongkaew	19 th floor SM Tower		koontongkaew@gmail.com	Office hours and by appointment
Lecturer	Prof. Jeerasak Nopakun	19 th floor SM Tower	089- 768-9431	Jeerasak.nopakun@gmail.com	Office hours and by appointment
Lecturer	Prof. Jintakorn Kuvatanasuchati	19 th floor SM Tower	064-137-2984	jintakorn.k@chula.ac.th	Office hours and by appointment
Lecturer	Assoc.Prof. Cholticha Amornchat	19 th floor SM Tower	089-990-6544	Amornchat_c@yahoo.com	Office hours and by appointment
Lecturer	Assoc. Prof. Dr. Chidchanok Leethanakul	Prince of Songkla University	095-936-5416	Chidchanok.l@psu.ac.th	Office hours and by appointment
Lecturer	Assoc. Prof. Dr. Yosananda Chantravekin	181 Mahidol Rd. T. Hai-Ya, A. Muang, Chiang Mai	081-984-4184	yosananda@hotmail.com	Office hours and by appointment

* Or other times as agreed by both student and lecturer.

Learning Supported Technologies/Applications (K4, UKPSF: The use and value of appropriate learning technologies)

- WU E-learning
 Facebook
 Google Education
 Mobile applications
 Others<https://prod.classflow.sg/classflow/>

.....

Diverse Learners Support (V1, UKPSF: Respect individual learners and diverse learning communities, V2, UKPSF: Promote participation in higher education and equality of opportunity for learners) (E.g. Learners'

diversities are background knowledge and experience, ethnic, religion, etc. Learners' special needs are the visually impaired, the physically impaired, or those with the needs for technological support, etc.)

Types of Learners with special needs: (Please specify)none.....(Optional)

Support plans and actions (Optional)

-----none-----

Online activities and discussion (Optional)

Online discussion is provided for student who need to consult with the lecturer.

.....
.....

Learning skills advice (To encourage lifelong learning and enhance the students' learning strategies.)

(Optional)

none

Course Policy/Regulations

Attendance & Participation

Please be here, and be engaged when you are here. This class will work best when all of us are involved in the discussion and learning the materials, and it's more interesting and meaningful for all of us when that occurs. We do understand that there are times when something will prevent your attendance: people get sick, emergencies occur, and so on (but guys...sleeping in or just skip class aren't in this category) If an emergency or similar unforeseen event occurs, please contact us as soon as it's feasible and we'll talk about making up any assignments regarding the course materials and assignments and how you can catch up with the class. If keep the lines of communication open, we'll be able to better handle any situations that may arise. Thanks for your help with this. If you read this, congratulation, let me know by the second week's class meeting and I'll owe you a meal.

Plagiarism

Plagiarism occurs when writers claim ownership of written words or ideas that are not their own. Plagiarism is a form of cheating and any instances of plagiarism will be dealt with promptly according to University procedures. Plagiarism is a form of academic dishonesty that is considered a serious offense and carries severe penalties ranging from failing an assignment to suspension from school. You are guilty of plagiarism any time you attempt to obtain academic credit by presenting someone else's ideas as your own without appropriately documenting the original source."

Assess and give feedback to learners (A3, UKPSF)

The 21st Century Skills Enhancement

1. **Morality and ethics** (Include both black and white dots as appeared in the TQF 2. Those with black dots must be evaluated. Those with white dots should be introduced in the course but not necessary to be evaluated. Present each sub-topic in the different line.) (Must be conformed with the 21st Century Skills, WU graduate attributes, (A1, A3, and K2, UKPSF))

Morality and ethics skills/characteristics to be developed	Assessment methods
○ 1.1 Exhibit discipline, punctuality, honesty and responsibility. Respecting to rules and laws of organizations and societies.	Class activities and evaluation in all topics and from assignments and discussion.
○ 1.2 Demonstrate ethical behavior in academic and research. No plagiarism	Class activities and evaluation in all topics and from assignments and discussion.
● 1.3 Respect to others' opinions and accepting the differences in individual both in academia and profession.	Class activities and evaluation in all topics.

2. Knowledge

(Follow TQF 2, Explain the overall picture then go into detail for each unit's content, activities, teaching and learning methods, and assessment methods. Each line, each topic)

Knowledge skills/characteristics to be developed	Assessment methods
● 2.1 Truly understand in theories and practices of research methodology. Develop self-learning skill and seek new knowledge.	Class activities and evaluation in all topics and from assignments, discussion and examination.
○ 2.2 Advance and translate bodies of knowledge in dental	Class activities and evaluation in all topics and from assignments, discussion and examination.

Knowledge skills/characteristics to be developed	Assessment methods
science to society or commercial benefits.	

3. High order thinking

(Each topic, each line)

skills/characteristics to be developed	Assessment methods
● 3.1 Systematically analyze and integrate knowledge from both theories and practices.	Class activities and evaluation in all topics and from assignments, discussion and examination.
○ 3.2 Initiate, analyze, systematic plan and conduct dental research.	Class activities and evaluation in all topics and from assignments and discussion.
○ 3.3 Synthesize information from research and develop a new knowledge.	Class activities and evaluation in all topics and from assignments and discussion.

4. Interpersonal relationship and responsibility

(Each topic, each line)

Interpersonal relationship and responsibility skills/characteristics to be developed	Assessment methods
○ 4.1 Creatively collaborate and appropriately interact to others.	Class activities and evaluation in all topics and from assignments and discussion.
● 4.2 Accept the differences in academic opinions and well demonstrate both leadership and followership.	Class activities and evaluation in all topics and from assignments and discussion.
○ 4.3 Exhibit responsibility in self and group.	Class activities and evaluation in all topics and from assignments and discussion.

5. Numeracy, communication, and information literacy skills

(Each topic, each line)

5. Numeracy, communication, and information literacy skills to be developed	Assessment methods
○ 5.1 Adequately apply the Mathematics and Statistics in data analysis, interpretation and presentation.	Class activities and evaluation in all topics and from assignments and discussion.
● 5.2 Appropriately apply information technology in data searching, collecting, processing, interpretation and presentation	Class activities and evaluation in all topics and from assignments and discussion.
○ 5.3 Effectively apply communication skills (speaking, listening and writing) in academic environment both formal and informal situation.	Class activities and evaluation in all topics and from assignments and discussion.
○ 5.4 Use English to Skillfully communicate in academic presentation, thesis and research both in formal and informal setting.	Class activities and evaluation in all topics and from assignments and discussion.

Learning Outcome Assessment Plan (Every black dot in the TQF 2)

No.	Learning Outcomes (PLO)	Assessment Methods	Assignment submission deadline	Assessment Proportion (Percentage)
1	1.1, 1.2, 1.3 , 2.1, 2.2, 3.1 , 3.2, 3.3, 4.1, 4.2 , 4.3, 5.1, 5.2 , 5.3, 5.4	Small group discussion participation		30
2	1.1, 2.1, 5.1	Formative assessment in class	in every class	10
3	2.1 , 3.1, 5.1	Final exam	Nov 13, 2019	50
4	1.1, 1.3 , 4.1, 4.2, 4.3	Class participation and classroom behavior	in every class	10

Assignment Criteria/Rubrics (Set the learning objectives. Is it group or individual work? Score proportion, assignment requirements and deadline, feedback, etc.)

Assessment form of small group discussion

Learning Objective	<p>3.1 Familiar with major topics of comprehensive molecular and cellular oral biology.</p> <p>3.2 Understand theoretical frameworks and current research problems in oral biology.</p> <p>Develop self-learning and seeking new knowledge in the field.</p> <p>3.3 Acquire critical skills to systematically analyze and integrate knowledge both theories and clinical applications of common oral diseases and conditions.</p> <p>3.4 Apply information technology into analyzing, evaluating and screening the peer-review research literatures in oral biology field.</p> <p>3.5 Respect to others' opinions and accepting the differences in individual both in academia and profession.</p> <p>3.6 Exhibit responsibility in self and group.</p>		
Individual / Group Assignment	individual		
Score Proportion	30		
assignment requirements and deadline			
Submission Deadline			
Requirements	Scale		
	6 Excellent	4 Fair	2 Need improvement
1. Conducting	<ul style="list-style-type: none"> ● Patient with differing opinions. ● Asks for clarification. ● Brings others into the dialogue. ● Very focused on the dialogue. 	<ul style="list-style-type: none"> ● Respectful. ● Comments, but does not attempt to involve others. ● Generally focused. 	<ul style="list-style-type: none"> ● Participates but shows impatience. ● Some focus. ● Engages in "sidebar" conversations.
2. Speaking	<ul style="list-style-type: none"> ● Speaks to all participants. ● Articulate. ● Takes a leadership role without monopolizing the discussion. 	<ul style="list-style-type: none"> ● Speaks to most participants. ● Attempts to move on to new ideas. ● Tends to "ramble on" after making a point. 	<ul style="list-style-type: none"> ● Speaks too softly. ● Needs prompting to get involved. ● Has no sustainable point; uses "sound bites." ● Monopolizes the discussion.
3. Reasoning	<ul style="list-style-type: none"> ● Cites relevant text. ● Relates topic to outside knowledge and other topics. ● Makes connections between own thoughts and others'. 	<ul style="list-style-type: none"> ● Makes limited connections to others' ideas. ● Some intriguing points that merit reaction. ● Some references to text. 	<ul style="list-style-type: none"> ● Accurate on minor points, but misses the main point. ● No textual support; "talking of the top of your head." ● Refuses to acknowledge alternate viewpoints.

	<ul style="list-style-type: none"> ●Willing to take an alternate viewpoint. ●Asks questions to further dialogue. 		
4. Listening	<ul style="list-style-type: none"> ●Writes down comments, questions, ideas. ●Builds on other's ideas & gives others credit. 	<ul style="list-style-type: none"> ●Generally attentive and focused. ●Responds thoughtfully. ●Takes <i>some</i> notes. 	<ul style="list-style-type: none"> ●Appears disconnected. ●Takes limited notes.
Reading/ Preparation	<ul style="list-style-type: none"> ●Familiar with text and understands major concepts. ●Was well prepared in small discussion groups. 	<ul style="list-style-type: none"> ●Fairly familiar with text. ●Was mostly prepared in small discussion groups 	<ul style="list-style-type: none"> ●Confused with key concepts of text. ●Poorly prepared in small discussion groups.

Feedback: (Compulsory for every assignment. This is an important tool for lecturers to check if students meet the learning objectives. If not, lecturers should help students so they can achieve the learning objectives. (A3, UKPSF))

.....

.....

Grading Criteria

Using the eight levels fixed rate assessment as shown in the following table

Scores	Grade Level	Meaning	Grade Value
> 85	A	Excellent	4.0
80-84	B+	Very Good	3.5
75-79	B	Good	3.0
70-74	C+	Fairly Good	2.5

I refers to "Incomplete Assessment"

W refers to "Withdraw"

Lecturer's use only: For Future Improvement of the Course

Engage in continuing professional development in subjects/disciplines and their pedagogy, incorporating research, scholarship and the evaluation of professional practices (A5, UKPSF)

Course Evaluation and Future Improvement (Conform to K5, UKPSF: Methods for evaluating the effectiveness of teaching and K6, UKPSF: The implications of quality assurance and quality enhancement for academic and professional practice with a particular focus on teaching)

- Teaching Evaluation Strategy (Please put ✓ in . You can choose more than 1 methods.)
 - Every student evaluates

- By examining students' results
- Comments from examiner's meeting
- Others.....

2. Strategies for course effectiveness evaluation by students

2.1 Post-course students' anonymous evaluation and comment on syllabus, topics, pedagogue, policy and supporting environment.

2.2 Course committee discussion and propose the improvement plan to the curriculum committee.

3. Teaching Future improvement

3.1 Organizing the meeting and/or seminars among teaching staff and the curriculum committee at the end of the course to reflect the course contents and/or teaching methods based on peers suggestion and course assessment by the students.

3.2 Proposing the revised curriculum to the curriculum committee for further discussion and approval.

4. Evaluation of students' success in learning

Verify the quality of the examination and the students' scores by the course coordinator and bring the results to the course committee and the curriculum committee seminars to discuss on how to improve the students' learning outcomes.

5. Plans and actions for course improvement

5.1 Revise and analyze the examinations by course committee.

5.2 Verify the quality of examination and the students' scores by the course coordinator and bring the results to the course committee and the curriculum committee seminars to discuss how to improve the students' learning outcomes.

----- Lecturer's use only -----

6. Experience sharing on teaching and learning participation

6.1 Please select how you share your teaching and learning experiences by put ✓ in . You can choose more than 1 methods.

- Participate in the university's monthly Teaching and Learning colloquium

Please specify the month

- Publish an article in an online newsletter

Please specify the newsletter detail

- Summarized the teaching and learning result in the template from

to be gathered in Walailak Digital Learning Repository (WDLR)

- Publish in national or international journal

Please specify the journal detail

- Presented in national or international conferences

Please specify the conference's detail

6.2 Sharing results from 6.1
